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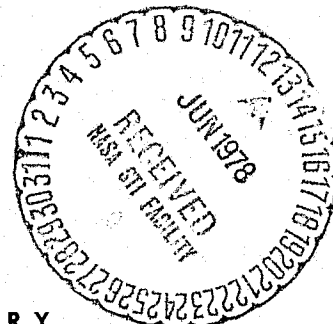
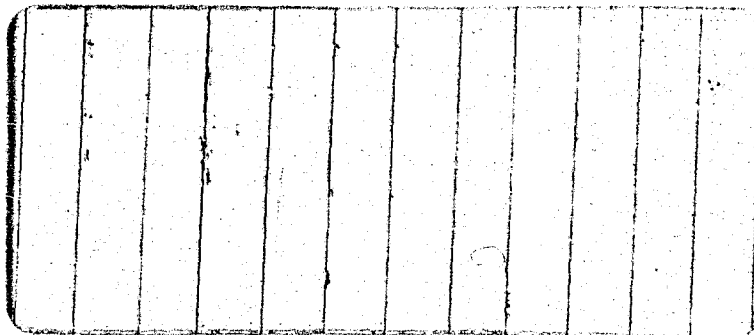
954582

(NASA-CR-157086) SYNTHETIC APERTURE RADAR
CORRELATOR PHASE HISTORIES Final Report
(Perkin-Elmer Corp.) 275 p HC A12/MF A01

N78-24398

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Unclas
G3/32 20694



JET PROPULSION LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA

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THE PERKIN-ELMER CORPORATION
APPLIED OPTICS DIVISION
2930 Bristol Street, Costa Mesa, California 92626

FINAL REPORT
SYNTHETIC APERTURE
RADAR CORRELATOR
PHASE HISTORIES

December 1977
Perkin-Elmer Report Number 6590

Prepared For
Jet Propulsion Laboratories
Pasadena, California

PERKIN-ELMER

This report is submitted in compliance with JPL Contract No. 954582.

It supplements the design of the following subsystems:

1. Zoom azimuth telescope, zooming range from 3X to 6X.
2. Range curvature correcting lenses.
3. Sphero-cylindrical shift lens.
4. Auxiliary lenses (tilted cylinder and matching lens)

These subsystems were designed to work with the Base Plant Correlator.

Two phase histories are analyzed in this report, which are labeled PHASE G and PHASE I. The parameters of these are:

	<u>PHASE G</u>	<u>PHASE I</u>
A	4.3	4.3
K_1	4.0696×10^5	4.0696×10^5
K_2	0.39062	0.39062
K_3	-4.5573×10^3	-4.5573×10^3
K_4	1.5748	1.5748
K_5	0	1645.0
r_o	109.6	109.6
x_{\min}	-1.65	-1.65
x_{\max}	1.65	1.65
y	0.665	0.665
r_c	110.6	110.6

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PART I

SPECIFICATION OF THE CORRELATOR AND SUBSYSTEMS

Notes on the Computer Printout

(1) The first column gives the surface number and type:

SPH denotes a spherical surface
CYL denotes a cylindrical surface

For these the next column indicates the radius which is printed at the center of the column in the case of a spherical surface. The radius of a cylindrical surface with horizontal axis is printed displaced to the left, and when the axis is vertical the radius is printed displaced to the right.

(2) Some of these "surfaces" are not actual optical surfaces as

RPH denoting radar phase history

The parameters of the phase history are found after the list of surfaces under the title "TABLE OF CONSTANTS". These parameters are printed in the following order

K_1	K_2	K_3	R_c	$2\pi K_5/K_4$
-------	-------	-------	-------	----------------

(3) Other "surfaces" actually denote rotation and translation in the coordinate axis, in particular

RTN denotes rotation

with the value of the angle given in radians, printed to the left for rotation about a horizontal axis and printed to the right for a rotation about a vertical axis..

(4) The third column indicates the axial separation between consecutive surfaces. The last column gives the relative position of each surface with respect to the image surface or output plane.

(5) Columns 4,5,6 specify refractive indices for the optical glasses used in the lens elements. The glass code appears in column 7 and the glass name in column 8.

(6) Columns 9 and 10 indicate the half-clear aperture of each surface.

2	-2	1	.332500=PM(1)	0.000000=SIN UM(1)	1.000000=HP(1)	0.000000=TAN UP(1)			
2	-2	1	1.650000=PM(2)	0.000000=SIN UM(2)	.090047=HP(2)	0.000000=TAN UP(2)			
			RADIUS,ETC	AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	25.4MM=UNIT OF LENGTH
				0.0000	1.00000	1.00000	1.00000		1ST.CA 2ND.CA STATION
									0.00 0.00 132.0518
1	RPH	*****	.0000	18.0000	1.00000	1.00000	1.00000	0.000	0.00 0.00 132.0518
2	SPH		-10.4469	1.8839	1.74969	1.77469	1.74729	755.276 SF4	2.15 0.00 114.0518
3	SPH		-13.4336	.0307	1.00000	1.00000	1.00000	0.000	2.33 0.00 112.1679
4	SPH		31.1330	1.3652	1.74969	1.77469	1.74729	755.276 SF4	2.34 0.00 112.1372
5	SPH		-24.5830	5.5793	1.00000	1.00000	1.00000	0.000	2.32 0.00 110.7720
6	SPH		-14.9126	1.3477	1.50671	1.51423	1.50592	508.612 ZKN7	1.76 0.00 105.1927
7	SPH		15.8548	3.6306	1.00000	1.00000	1.00000	0.000	1.72 0.00 103.8450
8	SPH		24.4464	1.3652	1.74969	1.77469	1.74729	755.276 SF4	1.78 0.00 100.2144
9	SPH		-34.5304	3.5303	1.00000	1.00000	1.00000	0.000	1.75 0.00 98.8492
10	SPH		13.1420	1.8553	1.74969	1.77469	1.74729	755.276 SF4	1.48 0.00 95.3189
11	SPH		10.5330	16.0000	1.00000	1.00000	1.00000	0.000	1.31 0.00 93.4636
12	RTN		-.0587	-.1653	1.00000	1.00000	1.00000	0.000	0.00 0.00 77.4636
13	SPH		-6.6582	.3305	1.79883	1.82776	1.79609	805.254 SF6	.45 .16 77.6288
14	CYL		-6.6582	-.1653	1.00000	1.00000	1.00000	0.000	.46 .18 77.2983
15	RTN		.0587	1.2919	1.00000	1.00000	1.00000	0.000	0.00 0.00 77.4636
16	RTN		.0587	-.1630	1.00000	1.00000	1.00000	0.000	0.00 0.00 76.1717
17	CYL		-7.3958	.3260	1.79883	1.82776	1.79609	805.254 SF6	.42 .25 76.3347
18	SPH		-7.7230	-.1630	1.00000	1.00000	1.00000	0.000	.41 .26 76.0087
19	RTN		-.0587	1.2522	1.00000	1.00000	1.00000	0.000	0.00 0.00 76.1717
20	CYL		5.6253	.2500	1.79883	1.82776	1.79609	805.254 SF6	.50 0.00 74.9195
21	SPH		30.3365	17.9790	1.00000	1.00000	1.00000	0.000	.50 0.00 74.6695
22	SPH		-10.5330	1.8553	1.74969	1.77469	1.74729	755.276 SF4	1.15 0.00 56.6905
23	SPH		-13.1420	3.5303	1.00000	1.00000	1.00000	0.000	1.27 0.00 54.8352
24	SPH		34.5304	1.3652	1.74969	1.77469	1.74729	755.276 SF4	1.40 0.00 51.3049

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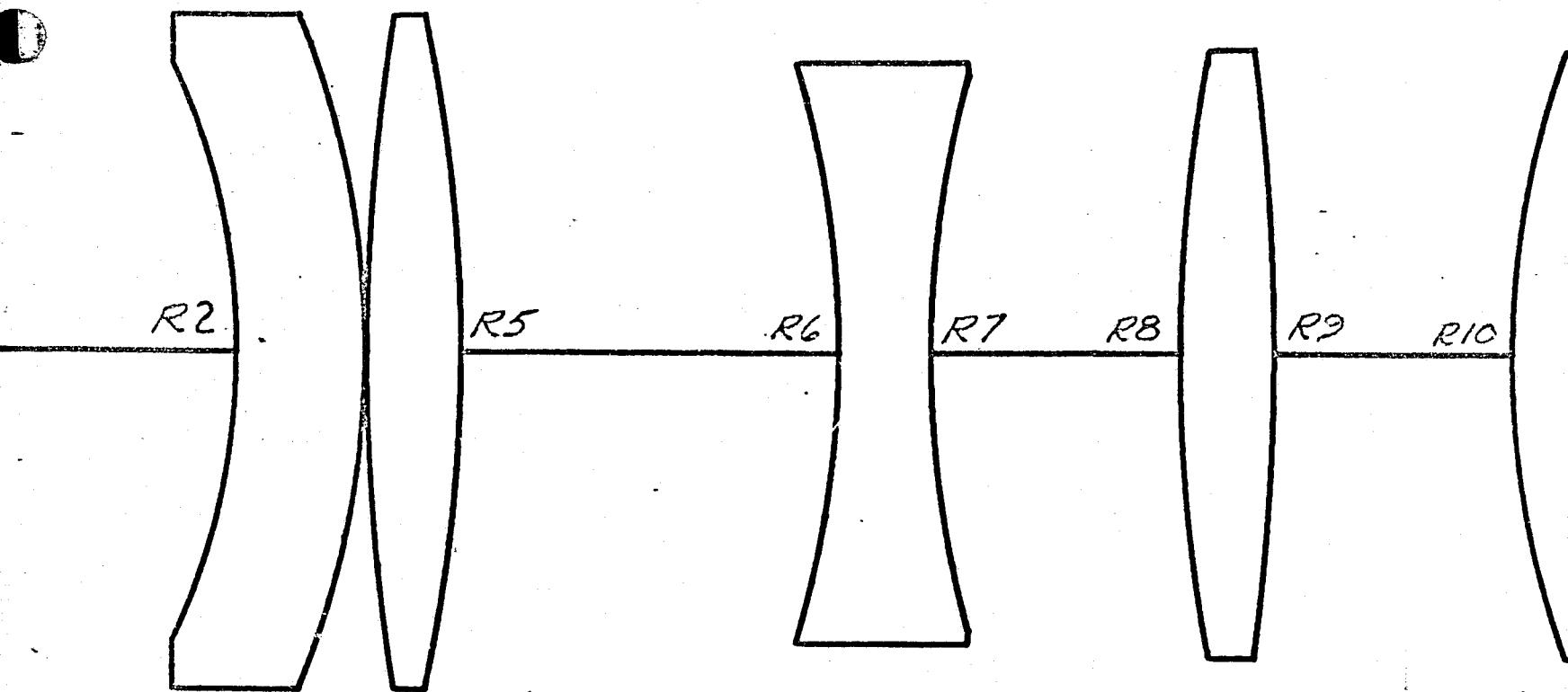
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29 SPH	-31.1330	.0307	1.00000	1.00000	1.00000	0.000		1.69	0.00	38.0172
30 SPH	13.4336	1.8839	1.74969	1.77469	1.74729	755.276	SF4	1.68	0.00	37.9865
31 SPH	10.4469	13.8798	1.00000	1.00000	1.00000	0.000		1.54	0.00	36.1026
32 CYL	3.6547	.6500	1.63269	1.64909	1.63108	636.353	F6	1.23	.50	22.2228
33 CYL	-6.4870	.2149	1.00000	1.00000	1.00000	0.000		1.22	.47	21.5728
34 CYL	-5.2748	.3500	1.79883	1.82776	1.79609	805.254	SF6	1.22	.43	21.3579
35 CYL	INFINITE	9.5469	1.00000	1.00000	1.00000	0.000		1.22	.42	21.0079
36 CYL	INFINITE	.3500	1.79883	1.82776	1.79609	805.254	SF6	1.10	.32	11.4610
37 CYL	2.2357	.6000	1.63269	1.64909	1.63108	636.353	F6	1.93	.33	11.1110
38 CYL	-2.1304	.2026	1.00000	1.00000	1.00000	0.000		1.09	.37	10.5110
39 CYL	2.5833	.6000	1.63269	1.64909	1.63108	636.353	F6	1.09	.36	10.3084
40 CYL	-3.2796	.3500	1.79883	1.82776	1.79609	805.254	SF6	1.08	.33	9.7084
41 CYL	INFINITE	2.3284	1.00000	1.00000	1.00000	0.000		1.08	.31	9.3584
42 CYL	-1.7898	.3500	1.79883	1.82776	1.79609	805.254	SF6	1.05	.13	7.0300
43 CYL	-5.6466	.0200	1.00000	1.00000	1.00000	0.000		1.05	.12	6.6800
44 CYL	INFINITE	.3500	1.79883	1.82776	1.79609	805.254	SF6	1.05	.12	6.6600
45 CYL	2.4613	.0200	1.00000	1.00000	1.00000	0.000		1.04	.11	6.3100
46 CYL	.9311	.3500	1.79883	1.82776	1.79609	805.254	SF6	1.04	.11	6.2900
47 CYL	1.2405	3.3600	1.00000	1.00000	1.00000	0.000		1.04	.09	5.9400
48 RTN	.0761	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	2.5800
49 CYL	INFINITE	.4000	1.79883	1.82776	1.79609	805.254	SF6	1.00	.06	2.5800
50 CYL	-1.2000	0.0000	1.00000	1.00000	1.00000	0.000		1.01	.07	2.1800
51 RTN	-.0761	.5000	1.00000	1.00000	1.00000	0.000		0.00	0.00	2.1800
52 CYL	1.2000	.4000	1.79883	1.82776	1.79609	805.254	SF6	1.01	.07	1.6800
53 CYL	INFINITE	1.2800	1.00000	1.00000	1.00000	0.000		1.00	.06	1.2800
54 SPH	INFINITE	-.0305	1.00000	1.00000	1.00000	0.000		0.00	0.00	-.0000

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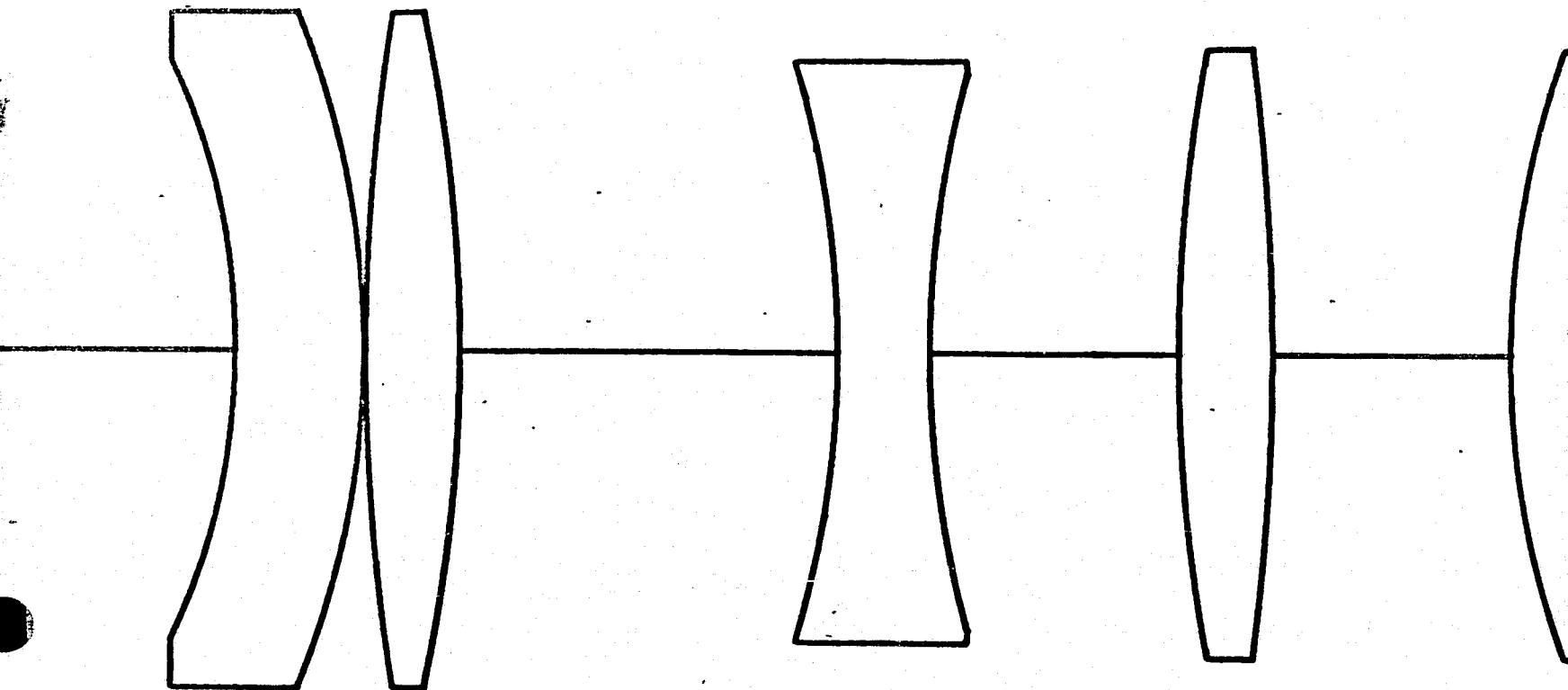
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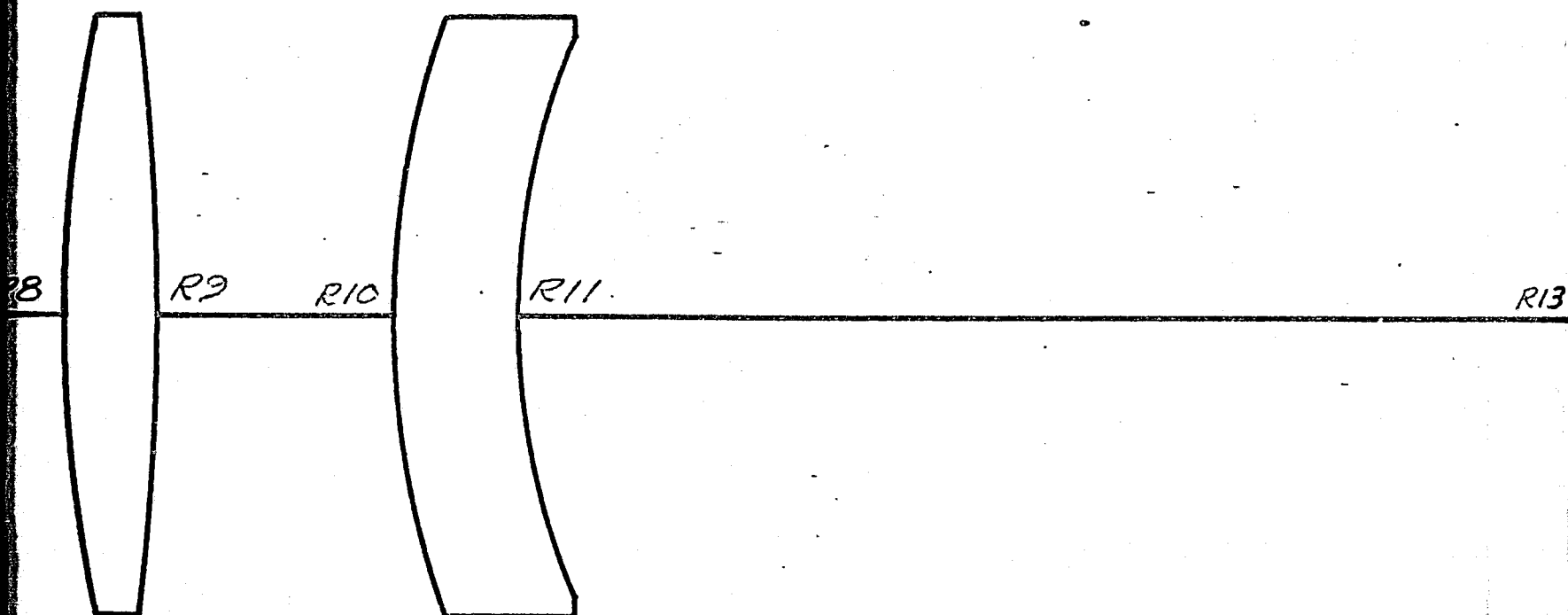
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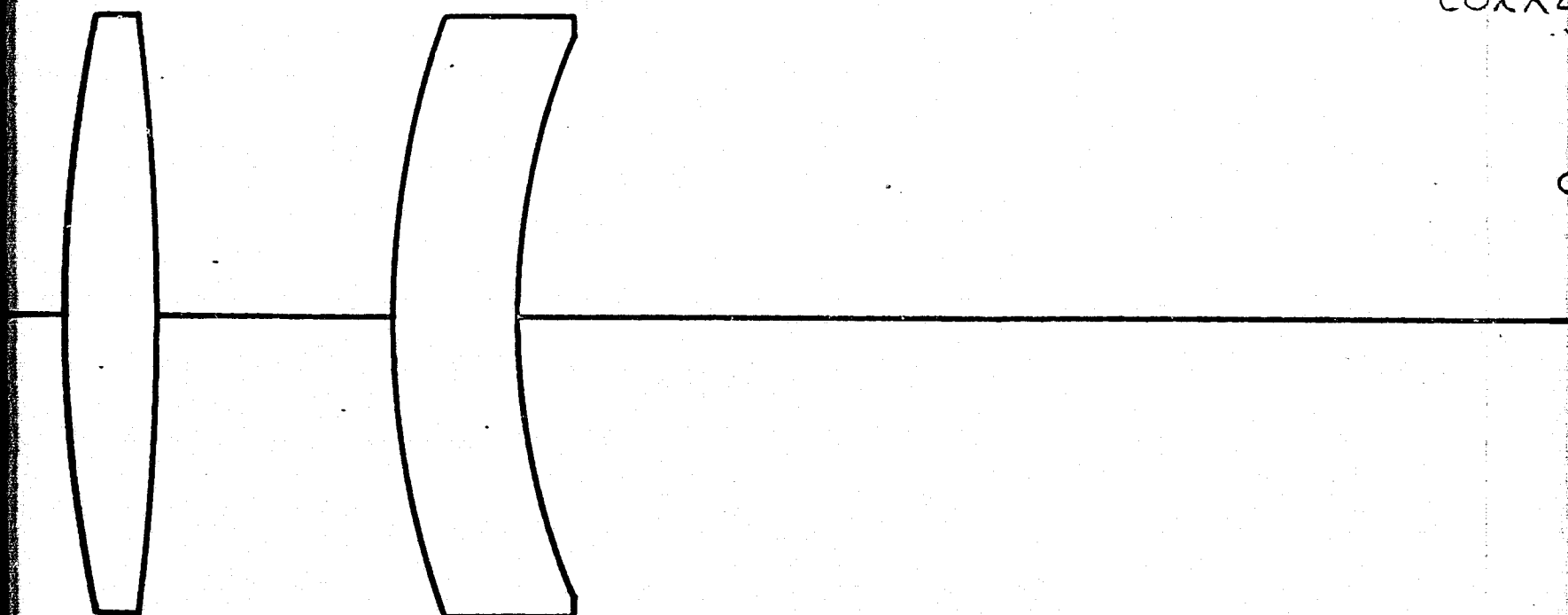


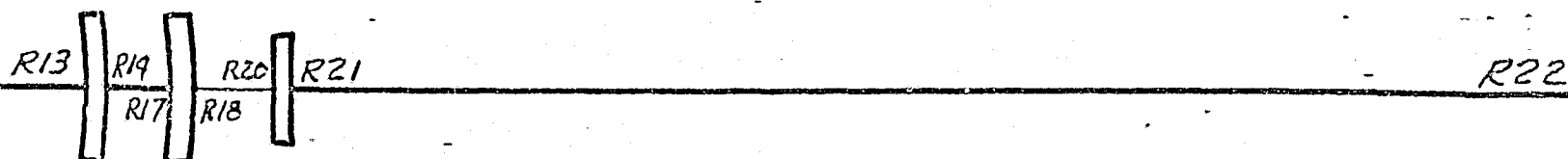
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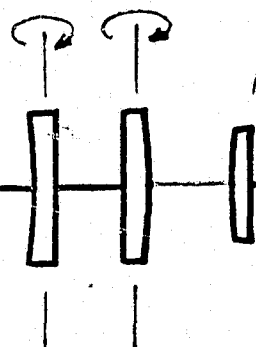
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CURV
CORR



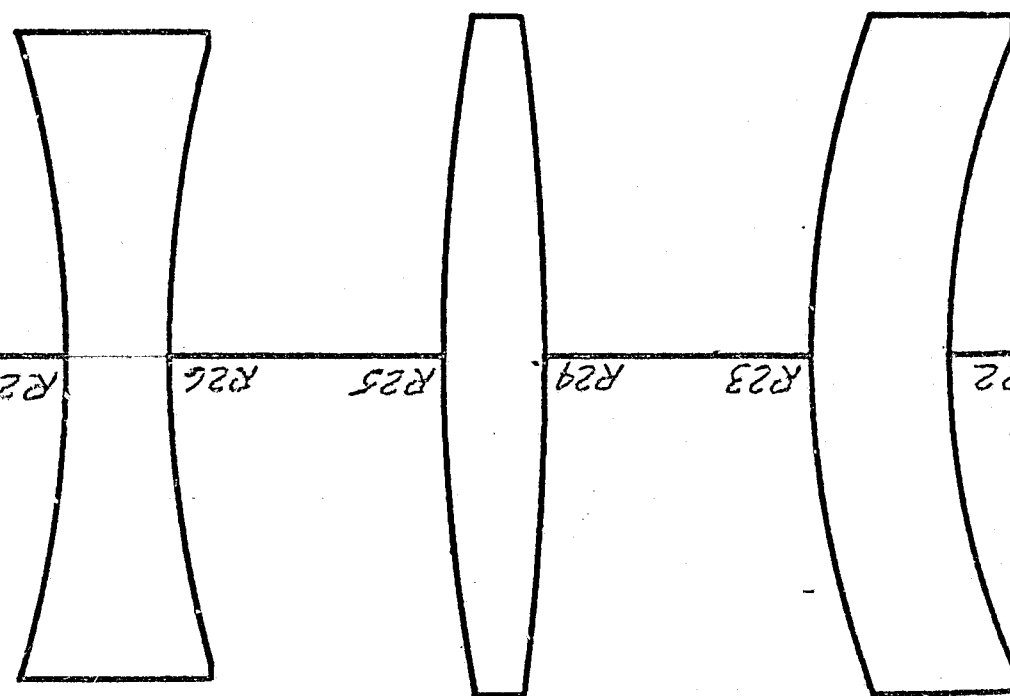
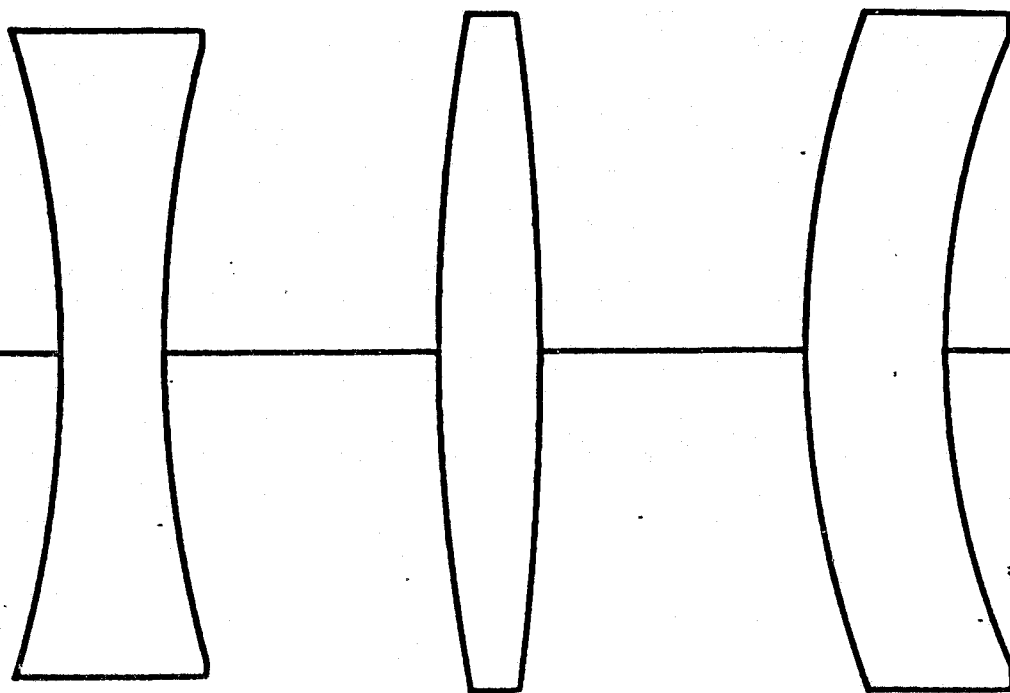


RANGE
CURVATURE
CORRECTOR

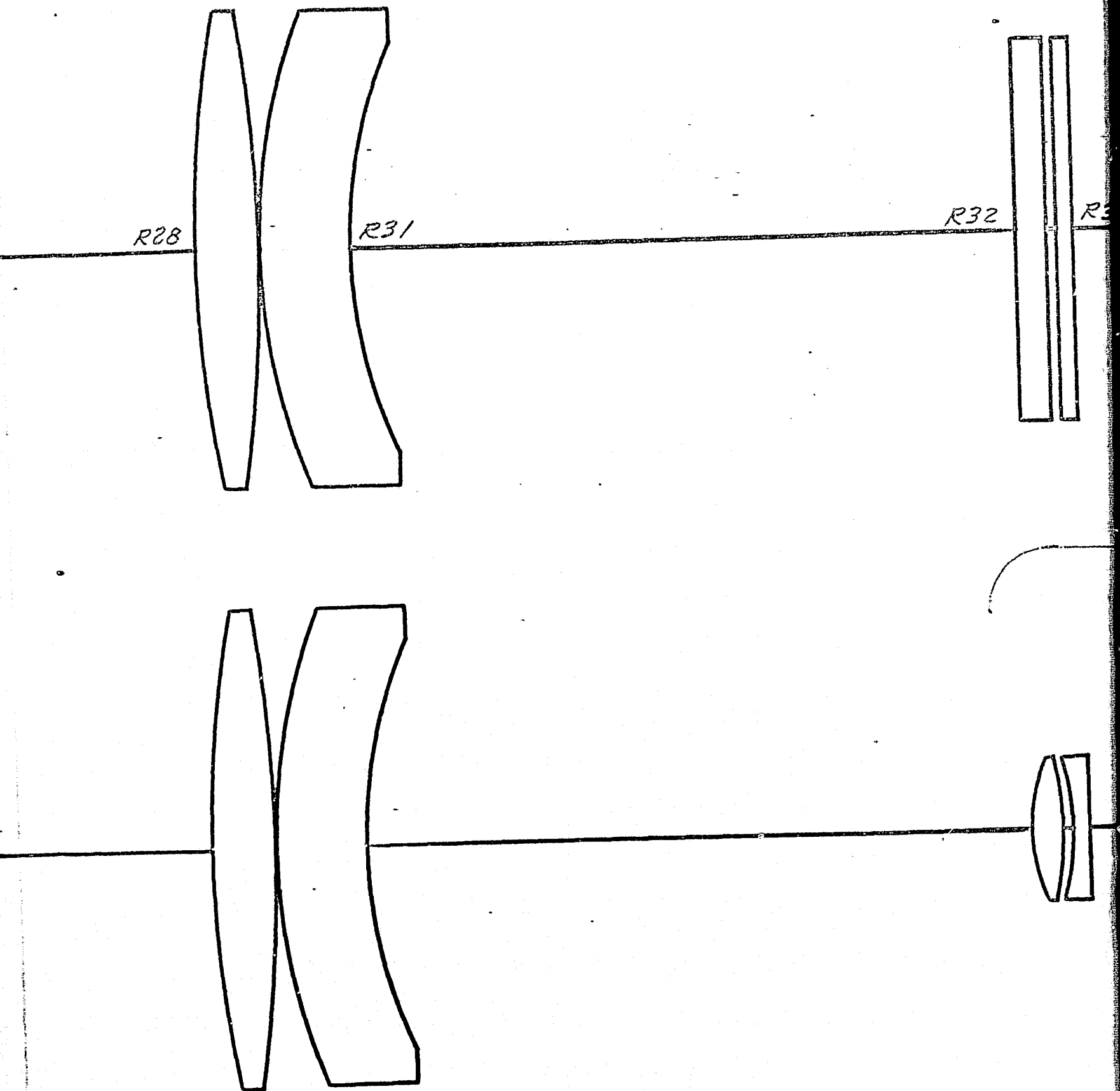
SHIFT LENS



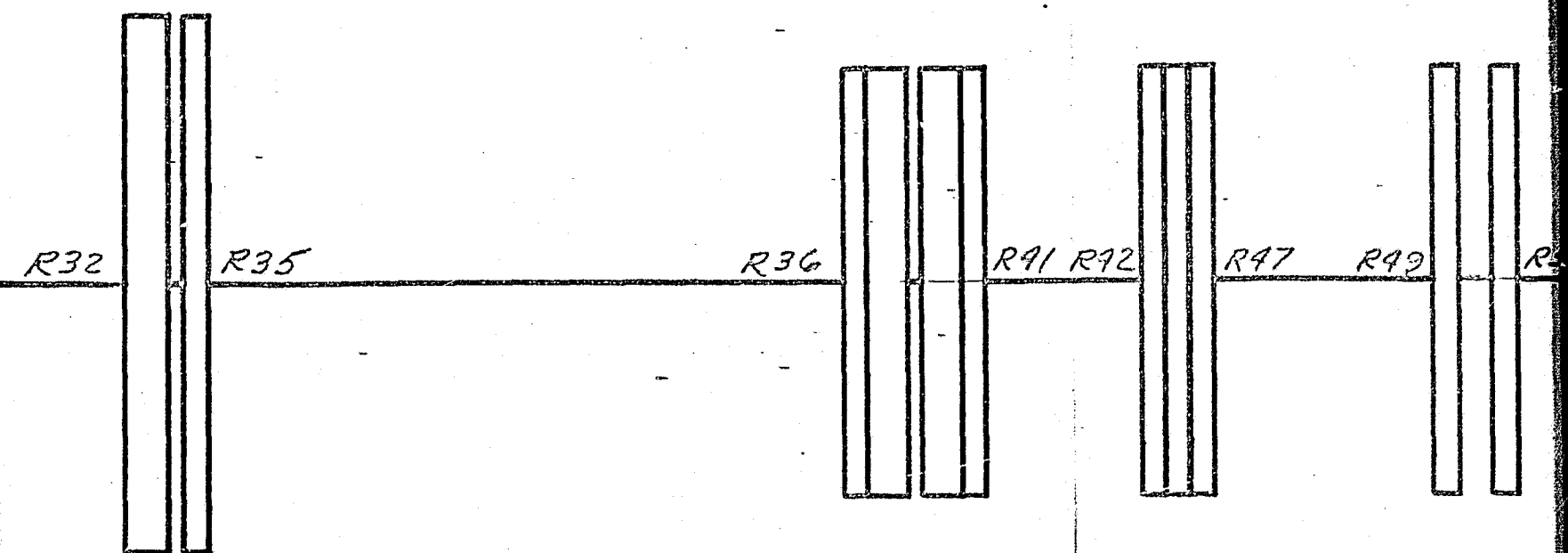
SPHERICAL TELESCOPE



4
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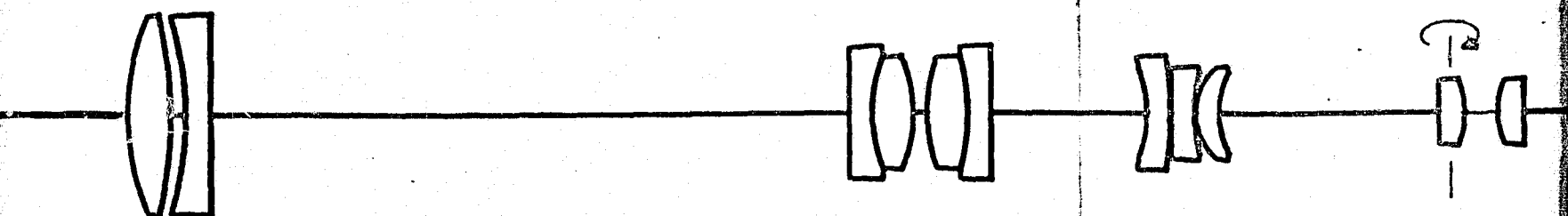


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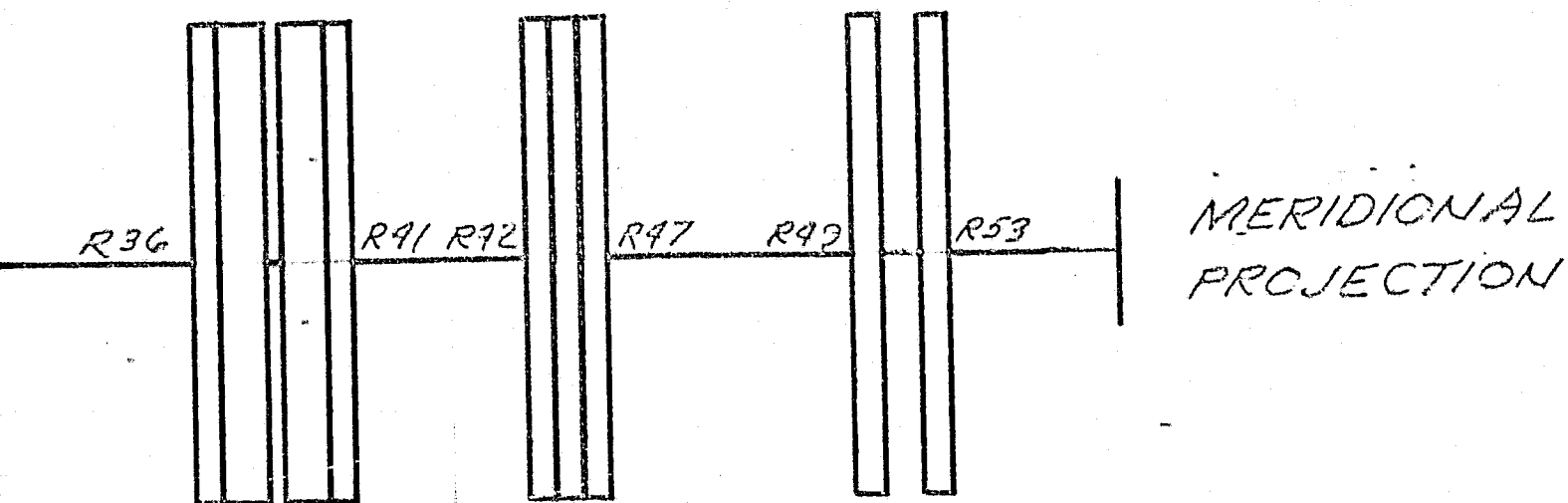
AZIMUTH TELESCOPE

AUXILIARY
LENSES



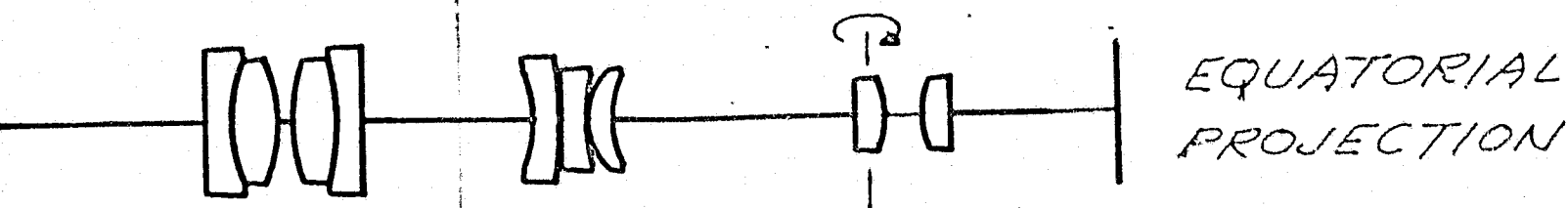
FOLDOUT FRAME 6

FOLDOUT FRAME 7



TELESCOPE

AUXILIARY
LENSES



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-27.670022	999999.999996	999999.999996	999999.999996	372040.205900	182809.719947	1.210148
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
1.000000	999999.999996	41.609055	-20.445409	-40.196955	4547.819820	-.966063
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-.966063	0.000000	131.981909	130.771761	-158.441783	.000303	-1.035130
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0.000000	1.248489	19.000000	159.651930	1.932125	1.210148	53.000000

FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

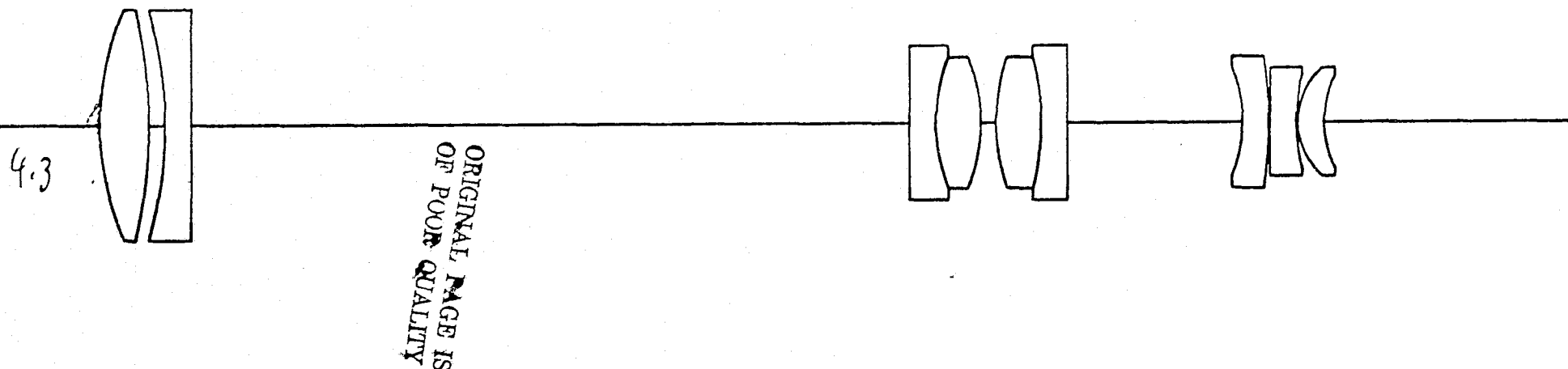
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175.467238	999999.999996	198.391415	4.166255	-3.781136	.385119	1.310471
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
.090047	999999.999996	-53.171890	9.663494	11.809819	.078354	-.020000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-.222106	0.000000	132.082232	130.771761	44.695477	-1.238164	-4.502346
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0.000000	6.479563	35.000000	-43.385006	0.000000	2.109813	47.000000

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DESIGN NO. 64325A. AZIMUTH TELESCOPE 4.3X MAGNIFICATION

103177- 0

 2 -2 1 .210416=PM(1) -.012500=SIN UM(1) 2.250000=HP(1) 0.000000=TAN UP(1)
 2 -2 1 .498972=PM(2) -.009854=SIN UM(2) .085999=HP(2) 0.000000=TAN UP(2)
 .63280 .48610 .65630 25.4MM=UNIT OF LENGTH



FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCF	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
16.833283	999999.999996	0.000000	999999.999996	0.000000	999999.999996	2.200000
OBJECT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
2.250000	999999.999996	-40.000000	999999.999996	-40.000000	999999.999996	2.250000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	0.000000	18.482757	16.282757	.550526	0.000000	1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
999999.999996	999999.999996	16.000000	1.649474	4.500000	2.200000	16.000000

103177- 0

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2  -2  1  .210416=PM(1)      -.012500=SIN UM(1)      2.250000=HP(1)      0.000000=TAN UP(1)
2  -2  1  .498972=PM(2)      -.009854=SIN UM(2)      .085999=HP(2)      0.000000=TAN UP(2)

```

		.63280	.48610	.65630	25.4MM=UNIT OF LENGTH			
RADIUS,ETC	AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	1ST.CA	2ND.CA	STATION
	0.0000	1.00000	1.00000	1.00000		0.00	0.00	19.6428

1 CYL	3.6547	.6500	1.63269	1.64909	1.63108	636.353 F6	2.46	.58	19.6428
2 CYL	-6.4870	.2149	1.00000	1.00000	1.00000	0.000	2.46	.54	18.9928
3 CYL	-5.2748	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.45	.51	18.7779
4 CYL	INFINITE	9.5469	1.00000	1.00000	1.00000	0.000	2.45	.49	18.4279
5 CYL	INFINITE	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.33	.35	8.8810
6 CYL	2.2357	.6000	1.63269	1.64909	1.63108	636.353 F6	2.33	.37	8.5310
7 CYL	-2.1304	.2026	1.00000	1.00000	1.00000	0.000	2.32	.40	7.9310
8 CYL	2.5833	.6000	1.63269	1.64909	1.63108	636.353 F6	2.32	.40	7.7284
9 CYL	-3.2796	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.32	.37	7.1284
10 CYL	INFINITE	2.3284	1.00000	1.00000	1.00000	0.000	2.31	.35	6.7784
11 CYL	-1.7898	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.28	.15	4.4500
12 CYL	-5.6466	.0200	1.00000	1.00000	1.00000	0.000	2.28	.14	4.1000
13 CYL	INFINITE	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.28	.14	4.0800
14 CYL	2.4613	.0200	1.00000	1.00000	1.00000	0.000	2.28	.14	3.7300
15 CYL	.9311	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.28	.14	3.7100
16 CYL	1.2905	3.3600	1.00000	1.00000	1.00000	0.000	2.28	.11	3.3600
17 SPH	INFINITE	1.1600	1.00000	1.00000	1.00000	0.000	0.00	0.00	-0.0000

OBJECT DISTNCF	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
16.833283	999999.999996	0.000000	999999.999996	0.000000	999999.999996	2.200000
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
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MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	RACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	0.000000	18.482757	16.282757	.550526	0.000000	1.000000
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99999.999996	999999.999996	16.000000	1.649474	4.500000	2.200000	16.000000

FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

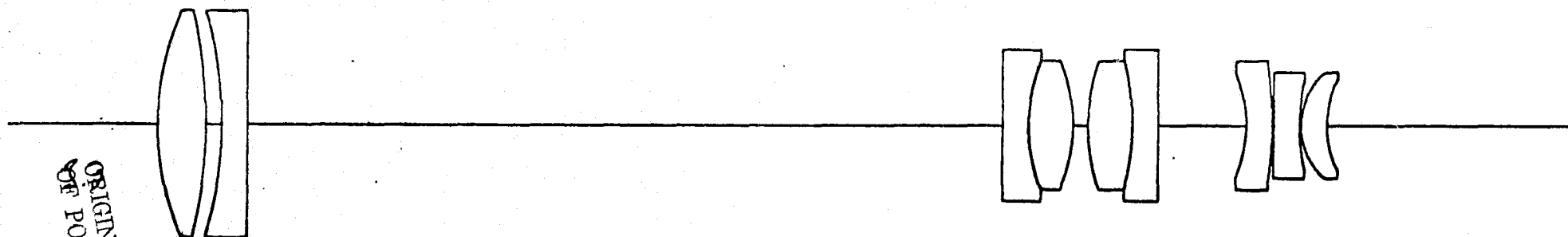
OBJECT DSTNC	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTANCE
50.63531	999999.999996	999999.999996	999999.999	999999.999996	999999.999996	2.1098
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
.085999	999999.999996	-50.739611	9.573566	11.799992	31933.004880	-.020000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	RACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-.232560	0.000000	18.482755	16.282757	34.352558	-.000003	-4.299970
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
.149868	6.454348	4.000000	-32.152560	.022304	5.468270	4.000000

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DESIGN NO.643258. AZIMUTH TELESCOPE 3.0X MAGNIFICATION.

103177- 0

 2 -2 1 .210124=PM(1) -.012500=SIN UM(1) 2.250000=HP(1) 0.000000=TAN UP(1)
 2 -2 1 .233193=PM(2) -.014124=SIN UM(2) .060000=HP(2) 0.000000=TAN UP(2)
 .63280 .48610 .65630 25.4MM=UNIT OF LENGTH



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 OF POOR QUALITY

FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCF	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
16.809902	999999.999996	0.000000	999999.999996	0.000000	999999.999996	2.700000
OBJECT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
2.250000	999999.999996	-40.000000	999999.999996	-40.000000	999999.999996	2.250000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	RACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	0.000000	18.459376	15.759376	1.050526	0.000000	1.000000
PT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
9999.999996	999999.999996	16.000000	1.649474	4.500000	2.700000	16.000000

DESIGN NO. 64325R. AZIMUTH TELESCOPE 3.0X MAGNIFICATION.

103177- 0

2	-2	1	.210124=PM(1)	-.012500=SIN UM(1)	2.250000=HP(1)	0.000000=TAN UP(1)			
2	-2	1	.233193=PM(2)	-.014124=SIN UM(2)	.060000=HP(2)	0.000000=TAN UP(2)			
				.63280	.48610	.65630	25.4MM=UNIT OF	LENGTH	
			RADIUS,ETC	AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	1ST.CA 2ND.CA STATION
				0.0000	1.00000	1.00000	1.00000		0.00 0.00 19.1194
1	CYL		3.6547	.6500	1.63269	1.64909	1.63108	636.353 F6	2.46 .29 19.1194
2	CYL		-6.4870	.2149	1.00000	1.00000	1.00000	0.000	2.46 .27 18.4694
3	CYL		-5.2748	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.45 .25 18.2545
4	CYL		INFINITE	10.1667	1.00000	1.00000	1.00000	0.000	2.45 .24 17.9045
5	CYL		INFINITE	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.32 .31 7.7378
6	CYL		2.2357	.6000	1.63269	1.64909	1.63108	636.353 F6	2.32 .32 7.3878
7	CYL		-2.1304	.2026	1.00000	1.00000	1.00000	0.000	2.32 .34 6.7878
8	CYL		2.5833	.6000	1.63269	1.64909	1.63108	636.353 F6	2.31 .34 6.5852
9	CYL		-3.2796	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.31 .30 5.9852
10	CYL		INFINITE	1.1852	1.00000	1.00000	1.00000	0.000	2.31 .28 5.6352
11	CYL		-1.7898	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.29 .17 4.4500
12	CYL		-5.6466	.0200	1.00000	1.00000	1.00000	0.000	2.29 .17 4.1000
13	CYL		INFINITE	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.29 .17 4.0800
14	CYL		2.4613	.0200	1.00000	1.00000	1.00000	0.000	2.29 .16 3.7300
15	CYL		.9311	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.29 .16 3.7100
16	CYL		1.2905	3.3600	1.00000	1.00000	1.00000	0.000	2.28 .13 3.3600
17	SPH		INFINITE	.6600	1.00000	1.00000	1.00000	0.000	0.00 0.00 -.0000

FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCE	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTANCE
16.809902	999999.999996	0.000000	999999.999996	0.000000	999999.999996	2.700000
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
2.250000	999999.999996	-40.000000	999999.999996	-40.000000	999999.999996	2.250000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	RACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATION
1.000000	0.000000	18.459376	15.759376	1.050526	0.000000	1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFC.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFC.NO
99999.999996	999999.999996	16.000000	1.649474	4.500000	2.700000	16.000000

FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

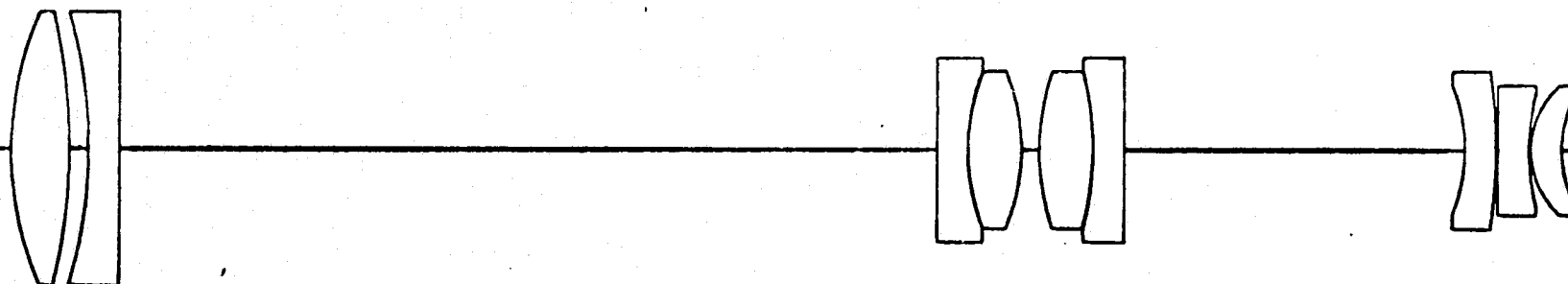
OBJ. CT DISTNCE	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DS INC	IMAGE DISTNCE
16.509999	999999.999996	999999.999996	999999.999996	999999.999996	551508.683662	2.000000
CRJECT HEID	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
.060000	999999.999996	-35.399933	8.849996	11.800000	46737.795224	-.020000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	RACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-.333334	0.000000	18.459376	15.759376	.750623	.000002	-2.999994
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
.214809	6.454348	4.000000	1.949377	.037222	4.095647	4.000000

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DESIGN NO.64325C. AZIMUTH TELESCOPE 6.0X MAGNIFICATION.

103177- 0

 2 -2 1 .205913=PM(1) -.012500=SIN UM(1) 2.250000=HP(1) 0.000000=TAN UP(1)
 2 -2 1 .538651=PM(2) -.007062=SIN UM(2) .120005=HP(2) 0.000000=TAN UP(2)
 .63280 .48610 .65630 25.4MM=UNIT OF LENGTH



FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCF	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
16.473002	999999.999996	0.000000	999999.999996	0.000000	999999.999996	.750000
OBJECT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCF.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
2.250000	999999.999996	-40.000000	999999.999996	-40.000000	999999.999996	2.250000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	0.000000	18.122476	17.372476	-.899474	0.000000	1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
99999.999996	999999.999996	16.000000	1.649474	4.500000	.750000	16.000000

DESIGN NO.64325C. AZIMUTH TELESCOPE 6.0X MAGNIFICATION.

103177- 0

2	-2	1	.205913=PM(1)	-.012500=SIN UM(1)	2.250000=HP(1)	0.000000=TAN UP(1)						
2	-2	1	.538651=PM(2)	-.007062=SIN UM(2)	.120005=HP(2)	0.000000=TAN UP(2)						
				.63280	.48610	.65630	25.4MM=UNIT OF	LENGTH				
			RADIUS.ETC	AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	1ST.CA	2ND.CA	STATION	
				0.0000	1.00000	1.00000	1.00000		0.00	0.00	20.7325	
1	CYL		3.6547	.6500	1.63269	1.64909	1.63108	636.353 F6	2.46	.66	20.7325	
2	CYL		-6.4870	.2149	1.00000	1.00000	1.00000	0.000	2.45	.62	20.0825	
3	CYL		-5.2748	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.45	.58	19.8676	
4	CYL		INFINITE	9.1417	1.00000	1.00000	1.00000	0.000	2.45	.56	19.5176	
5	CYL		INFINITE	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.33	.31	10.3759	
6	CYL		2.2357	.6000	1.63269	1.64909	1.63108	636.353 F6	2.33	.33	10.0259	
7	CYL		-2.1304	.2026	1.00000	1.00000	1.00000	0.000	2.32	.37	9.4259	
8	CYL		2.5833	.6000	1.63269	1.64909	1.63108	636.353 F6	2.32	.37	9.2233	
9	CYL		-3.2796	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.32	.34	8.6233	
10	CYL		INFINITE	3.8233	1.00000	1.00000	1.00000	0.000	2.31	.33	8.2733	
11	CYL		-1.7898	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.27	.08	4.4500	
12	CYL		-5.6466	.0200	1.00000	1.00000	1.00000	0.000	2.26	.07	4.1000	
13	CYL		INFINITE	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.26	.07	4.0800	
14	CYL		2.4613	.0200	1.00000	1.00000	1.00000	0.000	2.26	.07	3.7300	
15	CYL		.9311	.3500	1.79883	1.82776	1.79609	805.254 SF6	2.26	.07	3.7100	
16	CYL		1.2905	3.3600	1.00000	1.00000	1.00000	0.000	2.26	.05	3.3600	
17	SPH		INFINITE	2.6100	1.00000	1.00000	1.00000	0.000	0.00	0.00	-.0000	

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FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCE	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
16.473002	999999.999996	0.000000	999999.999996	0.000000	999999.999996	.750000
OBJECT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
2.250000	999999.999996	-40.000000	999999.999996	-40.000000	999999.999996	2.250000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	RACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	0.000000	18.122476	17.372476	-.899474	0.000000	1.000000
PT.STOP SIZE	APT.STOP DIST	FROM SRFC.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFC.NO
9999.999996	999999.999996	16.000000	1.649474	4.500000	.750000	16.000000

FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

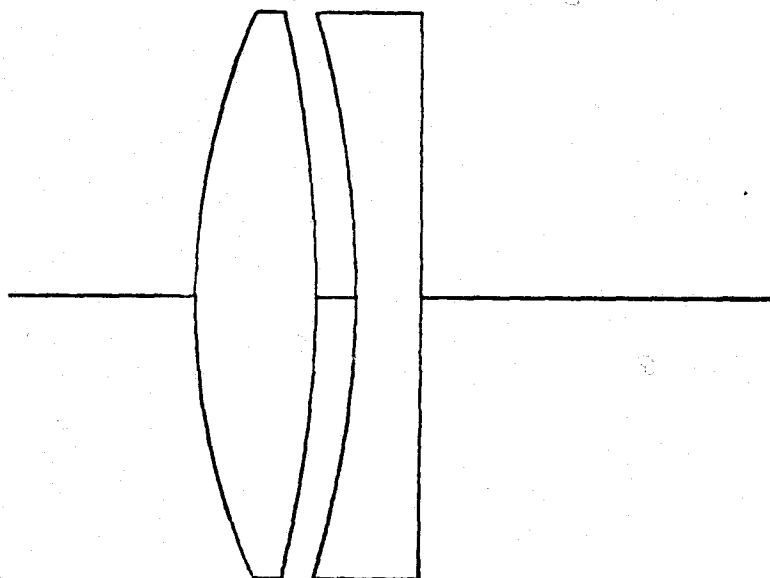
OBJECT DISTANCE	ENTR.PUP.DIST	FIRST.PPAL.PNT	EQV.FCL.LENGTH	SCND.PPAL.PNT	EXT.PUP.DS INC	IMAGE DISTANCE
76.27594	999999.999996	999999.999996	999999.999996	501425.957512	71630.536572	.75000
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
.120005	999999.999996	-70.802751	10.114342	11.800000	6070.320896	-.020000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	RACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-.166660	0.000000	18.122476	17.372476	58.903470	.000016	-6.000233
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
.107400	6.454348	4.000000	-58.153470	.021655	5.768262	4.000000

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DESIGN NO.643250. FIRST GOUP, AZIMUTH TELESCOPE.

103177- 0

 2 -2 1 .082198=PM(1) -.012500=SIN UM(1) 2.250000=HP(1) 0.000000=TAN UP(1)
 2 -2 1 .538651=PM(2) -.007062=SIN UM(2) .120005=HP(2) 0.000000=TAN UP(2)
 .63280 .48610 .65630 25.4MM=UNIT OF LENGTH



FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCF	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
6.575854	999999.999996	0.000000	999999.999996	0.000000	999999.999996	5.768300
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
2.250000	999999.999996	-40.000000	999999.999996	-40.000000	999999.999996	2.250000
MAGNTFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	RACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	0.000000	6.983166	1.214866	5.360988	0.000000	1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
99999.999996	999999.999996	4.000000	.407312	4.500000	5.768300	4.000000

DESIGN NO.64325D, FIRST GOUP, AZIMUTH TELESCOPE.

103177- 0

	RADIUS,ETC	AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	1ST.CA	2ND.CA	STATION
2 -2 1	.082198=PM(1)								
2 -2 1	.538651=PM(2)								
		.63280	.48610	.65630					
						25.4MM=UNIT OF LENGTH			
		0.0000	1.00000	1.00000	1.00000		0.00	0.00	10.3566
1 CYL	3.6547	.6500	1.63269	1.64909	1.63108	636.353 F6	4.00	1.50	10.3566
2 CYL	-6.4870	.2149	1.00000	1.00000	1.00000	0.000	4.00	1.50	9.7066
3 CYL	-5.2748	.3500	1.79883	1.82776	1.79609	805.254 SF6	4.00	1.50	9.4917
4 CYL	INFINITE	9.1417	1.00000	1.00000	1.00000	0.000	4.00	1.50	9.1417
5 SPH	INFINITE	3.3734	1.00000	1.00000	1.00000	0.000	0.00	0.00	.0000

FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCE	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
6.575854	999999.999996	0.000000	999999.999996	0.000000	999999.999996	5.768300
OBJECT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
2.250000	999999.999996	-40.000000	999999.999996	-40.000000	999999.999996	2.250000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	RACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	0.000000	6.983166	1.214866	5.360988	0.000000	1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
99999.999996	999999.999996	4.000000	-407312	4.500000	5.768300	4.000000

FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

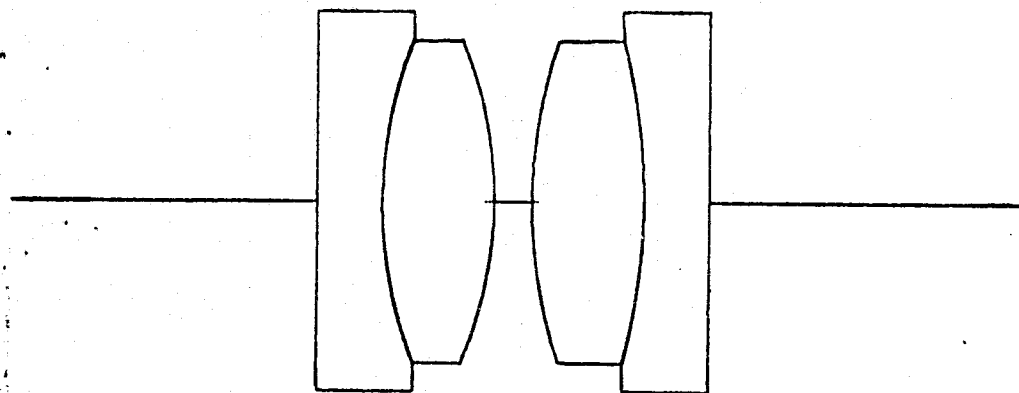
OBJECT DSTNCE	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
76.275946	999999.999996	-.401046	7.604222	-1.149874	6.454348	5.768262
OBJECT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
.120005	999999.999996	-70.802751	-7.021661	-6.388136	.107400	.010827
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	RACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
.090224	0.000000	6.983128	1.214866	75.061080	-.904128	11.083476
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
99999.999996	999999.999996	1.000000	-69.292819	.021655	5.768262	4.000000

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DESIGN NO.64325E, SECOND GROUP, AZIMUTH TELESCOPE.

103177- 0

 2 -2 1 .077132=PM(1) -.012500=SIN UM(1) 2.250000=HP(1) 0.000000=TAN UP(1)
 2 -2 1 -.264039=PM(2) -.078270=SIN UM(2) -.042410=HP(2) -.015781=TAN UP(2)
 .63280 .48610 .65630 25.4MM=UNIT OF LENGTH



FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCF	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
6.170537	999999.999996	0.000000	999999.999996	0.000000	999999.999996	4.843800
OBJECT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
2.250000	999999.999996	-40.000000	999999.999996	-40.000000	999999.999996	2.250000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	0.000000	6.946411	2.102610	4.067927	0.000000	1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
99999.999996	999999.999996	6.000000	.775873	4.500000	4.843800	6.000000

DESIGN NO.64325E, SECOND GROUP, AZIMUTH TELESCOPE.

103177- 0

2	-2	1	.077132=PM(1)	-.012500=SIN UM(1)	2.250000=HP(1)	0.000000=TAN UP(1)					
2	-2	1	-.264039=PM(2)	-.078270=SIN UM(2)	-.042410=HP(2)	-.015781=TAN UP(2)					
				.63280	.48610	.65630	25.4MM=UNIT OF	LENGTH			
			RADIUS.ETC	AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	1ST.CA	2ND.CA	STATION
				0.0000	1.00000	1.00000	1.00000		0.00	0.00	5.9259
1	CYL		INFINITE	.3500	1.79883	1.82776	1.79609	805.254 SF6	3.20	1.00	5.9259
2	CYL		2.2357	.6000	1.63269	1.64909	1.63108	636.353 F6	3.20	.85	5.5759
3	CYL		-2.1304	.2026	1.00000	1.00000	1.00000	0.000	3.20	.85	4.9759
4	CYL		2.5833	.6000	1.63269	1.64909	1.63108	636.353 F6	3.20	.85	4.7733
5	CYL		-3.2796	.3500	1.79883	1.82776	1.79609	805.254 SF6	3.20	.85	4.1733
6	CYL		INFINITE	3.8233	1.00000	1.00000	1.00000	0.000	3.20	1.00	3.8233
7	SPH		INFINITE	-1.0205	1.00000	1.00000	1.00000	0.000	0.00	0.00	.0000

FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCE	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
6.170537	999999.999996	0.000000	999999.999996	0.000000	999999.999996	4.843800
OBJECT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
2.250000	999999.999996	-40.000000	999999.999996	-40.000000	999999.999996	2.250000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	0.000000	6.946411	2.102610	4.067927	0.000000	1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
99999.999996	999999.999996	6.000000	.775873	4.500000	4.843800	6.000000

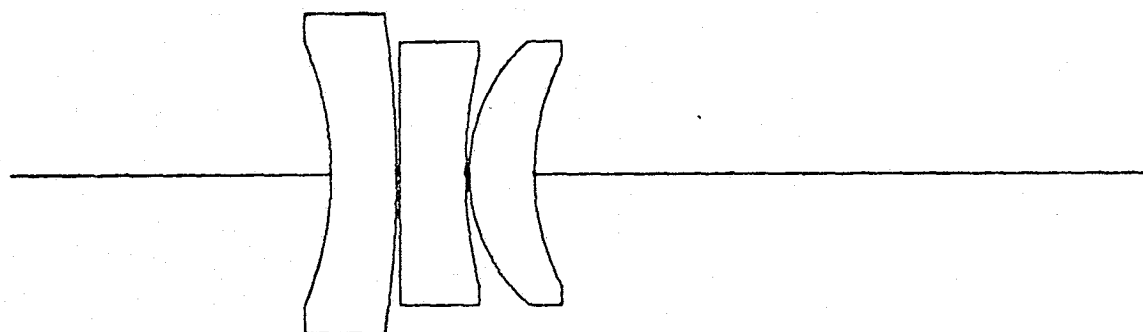
FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

OBJECT DSTNCE	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
-3.373438	-2.687409	.663155	2.325500	-.642248	6.958975	4.843777
OBJECT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
.010826	.107391	-6.388144	3.680240	8.681955	.243632	-.014714
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-1.359073	-.904110	6.946387	2.102610	-5.476049	.398552	-.735796
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
.107391	-2.687409	1.000000	10.319826	.029427	4.843777	6.000000

DESIGN NO.64325F. THIRD GROUP, AZIMUTH TELESCOPE.

103177- 0

 2 -2 1 .205913=PM(1) -.012500=SIN UM(1) 2.250000=HP(1) 0.000000=TAN UP(1)
 2 -2 1 -.058770=PM(2) .057591=SIN UM(2) -.021813=HP(2) .006956=TAN UP(2)
 .63280 .48610 .65630 25.4MM=UNIT OF LENGTH



FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCF	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
16.473002	999999.999996	0.000000	999999.999996	0.000000	999999.999996	15.849291
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
2.250000	999999.999996	-40.000000	999999.999996	-40.000000	999999.999996	2.250000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	RACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	0.000000	16.939291	1.090000	15.383002	0.000000	1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
99999.999996	999999.999996	6.000000	.466288	4.500000	15.849291	6.000000

DESIGN NO.64325F. THIRD GROUP, AZIMUTH TELESCOPE.

103177- 0

	RADIUS.ETC	AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	1ST.CA	2ND.CA	STATION
2 -2 1	.205913=PM(1)	-.012500=SIN UM(1)	2.250000=HP(1)	0.000000=TAN UP(1)					
2 -2 1	-.058770=PM(2)	.057591=SIN UM(2)	-.021813=HP(2)	.006956=TAN UP(2)					
		.63280	.48610	.65630	25.4MM=UNIT OF			LENGTH	
		0.0000	1.00000	1.00000	1.00000		0.00	0.00	4.4500
1 CYL	-1.7898	.3500	1.79883	1.82776	1.79609	805.254 SF6	3.20	.70	4.4500
2 CYL	-5.6466	.0200	1.00000	1.00000	1.00000	0.000	3.20	.85	4.1000
3 CYL	INFINITE	.3500	1.79883	1.82776	1.79609	805.254 SF6	3.20	.70	4.0800
4 CYL	2.4613	.0200	1.00000	1.00000	1.00000	0.000	3.20	.60	3.7300
5 CYL	.9311	.3500	1.79883	1.82776	1.79609	805.254 SF6	3.20	.70	3.7100
6 CYL	1.2905	3.3600	1.00000	1.00000	1.00000	0.000	3.20	.60	3.3600
7 SPH	INFINITE	2.6100	1.00000	1.00000	1.00000	0.000	0.00	0.00	.0000

FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCE	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
16.473002	999999.999996	0.000000	999999.999996	0.000000	999999.999996	15.849291
OBJECT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
2.250000	999999.999996	-40.000000	999999.999996	-40.000000	999999.999996	2.250000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	0.000000	16.939291	1.090000	15.383002	0.000000	1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCF.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCF.NO
99999.999996	999999.999996	6.000000	.466288	4.500000	15.849291	6.000000

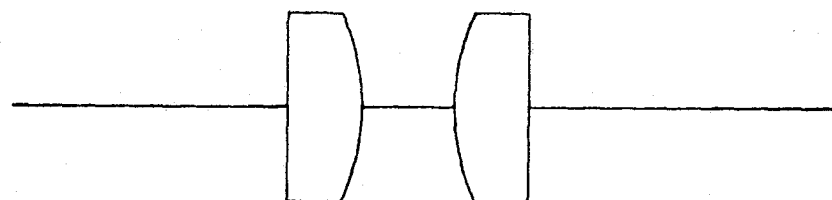
FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

OBJECT DSTNCE	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
1.020476	3.135854	.260671	-2.875412	-.282684	36027.974458	.750000
OBJECT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
-.014715	.243654	8.681894	-32.855825	11.799934	3053.171818	-.019999
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.359143	.398543	1.840000	1.090000	-.069524	.000032	.735758
APT.STOP SIZE	APT.STOP DIST	FROM SRFCF.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCF.NO
.243654	3.135854	1.000000	.819524	.039998	.750000	6.000000

DESIGN NO.64325J. PAIR OF AUXILIARY LENSES (TILTED CYLINDER).

103177- 0

 ? -2 1 .027671=PM(1) -.012439=SIN UM(1) -1.000000=HP(1) 0.000000=TAN UP(1)
 ? -2 1 -.056028=PM(2) -.043778=SIN UM(2) .020000=HP(2) 0.000000=TAN UP(2)
 .63280 .48610 .65630 25.4MM=UNIT OF LENGTH



FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCF	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
2.224533	999999.999996	0.000000	999999.999996	0.000000	999999.999996	1.279800
ORJFCT HEIGHT	ENR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
-1.000000	999999.999996	-40.196157	999999.999996	-40.196157	999999.999996	-1.000000
MAGNTFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	RACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	0.000000	2.579800	1.300000	.924533	0.000000	1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
99999.999996	999999.999996	4.000000	.355267	2.000000	1.279800	4.000000

DESIGN NO.64325J. PAIR OF AUXILIARY LENSFS (TILTED CYLINDER).

103177- 0

2	-2	1	.027671=PM(1)	-.012439=SIN UM(1)	-1.000000=HP(1)	0.000000=TAN UP(1)					
2	-2	1	-.056028=PM(2)	-.043778=SIN UM(2)	.020000=HP(2)	0.000000=TAN UP(2)					
				.63280	.48610	.65630	25.4MM=UNIT OF	LENGTH			
			RADIUS.ETC	AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	1ST.CA	2ND.CA	STATION
				0.0000	1.00000	1.00000	1.00000		0.00	0.00	2.5800
1	CYL		INFINITE	.4000	1.79883	1.82776	1.79609	805.254 SF6	.97	.04	2.5800
2	CYL		-1.2000	.5000	1.00000	1.00000	1.00000	0.000	.98	.05	2.1800
3	CYL		1.2000	.4000	1.79883	1.82776	1.79609	805.254 SF6	.98	.05	1.6800
4	CYL		INFINITE	1.2800	1.00000	1.00000	1.00000	0.000	.98	.05	1.2800
5	SPH		INFINITE	.0002	1.00000	1.00000	1.00000	0.000	0.00	0.00	0.0000

FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCF	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
2.224533	999999.999996	0.000000	999999.999996	0.000000	999999.999996	1.279800
OBJECT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
-1.000000	999999.999996	-40.196157	999999.999996	-40.196157	999999.999996	-1.000000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	0.000000	2.579800	1.300000	.924533	0.000000	1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
99999.999996	999999.999996	4.000000	.355267	2.000000	1.279800	4.000000

FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

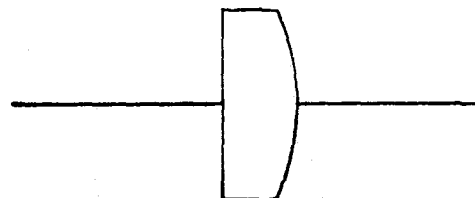
OBJECT DSTNCF	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
-1.279826	999999.999996	.522279	.901052	-.522279	.378773	1.279825
OBJECT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
.020000	999999.999996	-11.421262	5.710630	11.421256	.078893	-.020000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-1.000000	0.000000	2.579825	1.300000	-2.579826	-1.271545	-1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
.078893	.378773	4.000000	3.859651	.040000	1.279825	4.000000

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DESIGN NO.64325K. AUXILIARY LENS ELEMENT.

- 0

 2 -2 0 .018685=PM(1) -.012439=SIN UM(1) -.966073=HP(1) 0.000000=TAN UP(1)
 1 -2 0 -.064897=PM(2) 0.000000=SIN UM(2) .003645=HP(2) -.003574=TAN UP(2)
 .63280 .48613 .65627 25.4MM=UNIT OF LENGTH



FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCF	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
1.502166	999999.999996	0.000000	999999.999996	0.000000	999999.999996	1.279800
OBJFCT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
-.966073	999999.999996	-40.196157	999999.999996	-40.196157	999999.999996	-.966073
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	0.000000	1.679800	.400000	1.102166	0.000000	1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
99999.999996	999999.999996	2.000000	.177634	1.932146	1.279800	2.000000

DESIGN NO.64325K. AUXILIARY LENS ELEMENT.

- 0

2	-2	0	.018685=PM(1)	-.012439=SIN UM(1)	-.966073=HP(1)	0.000000=TAN UP(1)					
1	-2	0	-.064897=PM(2)	0.000000=SIN UM(2)	.003645=HP(2)	-.003574=TAN UP(2)					
			.63280	.48613	.65627	25.4MM=UNIT OF LENGTH					
RADIUS.ETC			AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	1ST.CA	2ND.CA	STATION	
			0.0000	1.00000	1.00000	1.00000		1.00	0.00	.4000	
1	CYL		1.2000	.4000	1.79883	1.82775	1.79609	805.254 SF6	3.20	.50	.4000
2	CYL		INFINITE	0.0000	1.00000	1.00000	1.00000	0.000	3.20	.50	0.0000
3	SPH		INFINITE	-1.2798	1.00000	1.00000	1.00000	0.000	0.00	0.00	0.0000

FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCE	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
1.502166	999999.999996	0.000000	999999.999996	0.000000	999999.999996	1.279800
OBJECT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
-.966073	999999.999996	-40.196157	999999.999996	-40.196157	999999.999996	-.966073
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	0.000000	1.679800	.400000	1.102166	0.000000	1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFC.E.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
999999.999996	999999.999996	2.000000	.177634	1.932146	1.279800	2.000000

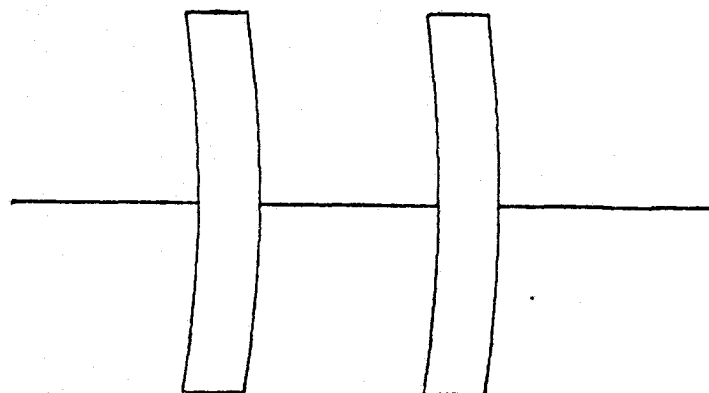
FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

OBJECT DSTNCE	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
999999.999996	1.019866	.000000	1.502192	-.222366	.385088	1.279825
OBJECT HEIGHT	FNTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
999999.999996	.129794	999999.999996	11.573661	11.573661	.077308	-.005369
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
0.000000	-.204774	1.679825	.400000	999999.999996	-.343797	999999.999996
APT.STOP SIZE	APT.STOP DIST	FROM SRFC.E.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
.077308	.385088	2.000000	999999.999996	.010738	1.279825	2.000000

DESIGN NO.64325L, RANGE CURVATURE CORRECTOR.

112277- 0

 3 -2 0 1.000000=PM(1) 0.000000=SIN UM(1) 0.000000=HP(1) .010000=TAN UP(1)
 3 -2 0 1.000000=PM(2) 0.000000=SIN UM(2) 0.000000=HP(2) .010000=TAN UP(2)
 .63280 .48613 .65627 25.4MM=UNIT OF LENGTH



FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCF	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
99999.999996	0.000000	-6332.998839	999999.999996	-6581.132926	-1.374306	999999.999996
OBJECT HEIGHT	ENTR.PUP.SIZE	ORJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
99999.999996	2.000000	999999.999996	84433.540086	84433.540086	2.077928	-1688.670802
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	RACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.038964	.572939	999999.999996	1.617500	999999.999996	.551453	.962497
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
2.000000	0.000000	1.000000	999999.999996	3377.341603	999999.999996	4.000000

DESIGN NO.64325L, RANGE CURVATURE CORRECTOR.

112277- 0

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3  -2  0   1.000000=PM(1)      0.000000=SIN UM(1)      0.000000=HP(1)      .010000=TAN UP(1)
3  -2  0   1.000000=PM(2)      0.000000=SIN UM(2)      0.000000=HP(2)      .010000=TAN UP(2)

                                .63280   .48613   .65627
                                25.4MM=UNIT OF LENGTH
                                1ST.CA 2ND.CA      STATION
                                1.00   0.00      2.8175

1 SPH      -6.6582      .3302  1.80037  1.82937  1.79762  805.254 SF6      1.00   0.00      2.8175
2 CYL      -6.6582      .9617  1.00000  1.00000  1.00000      0.000      1.00   0.00      2.4873

3 CYL      -7.3958      .3256  1.80037  1.82937  1.79762  805.254 SF6      1.00   0.00      1.5256
4 SPH      -7.7230      1.2000  1.00000  1.00000  1.00000      0.000      1.00   0.00      1.2000

5 SPH      INFINITE      2.7372  1.00000  1.00000  1.00000      0.000      0.00   0.00      0.0000
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FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

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OBJECT DSTNCF  FNTR.PUP.DIST  FRST.PPAL.PNT  EQV.FCL.LNGTH  SCND.PPAL.PNT  EXT.PUP.DSTNC  IMAGE DISTNCE
99999.999996   0.000000      -6332.998839  99999.999996   -6581.132926   -1.374306  99999.999996
OBJECT HEIGHT  ENTR.PUP.SIZE  OBJT.SPCE.FNO  INF.EQUIV.FNO  IMGE.SPCE.FNO  EXT.PUPL.SIZE  IMAGE HEIGHT
99999.999996   2.000000  99999.999996   84433.540086   84433.540086   2.077928   -1688.670802
MAGNIFICATION  SEMIANG.FIELD  FRNT.VTX.DIST  BARREL LENGTH  BACK VTX.DIST  SEMIANG.FIELD  DEMAGNIFICATN
1.038964      .572939  99999.999996   1.617500  99999.999996   .551453      .962497
APT.STOP SIZE  APT.STOP DIST  FROM SRFCE.NO  TRACK LENGTH  FLD.STOP SIZE  FLD.STOP DIST  FROM.SRFCE.NO
2.000000      0.000000      1.000000  99999.999996   3377.341603  99999.999996   4.000000
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FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

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OBJECT DSTNCF  ENTR.PUP.DIST  FRST.PPAL.PNT  EQV.FCL.LNGTH  SCND.PPAL.PNT  EXT.PUP.DSTNC  IMAGE DISTNCE
99999.999996   0.000000      -2492.074773  -18135.368476   -2890.615102   -1.537192  -21025.983578
OBJECT HEIGHT  ENTR.PUP.SIZE  OBJT.SPCE.FNO  INF.EQUIV.FNO  IMGE.SPCE.FNO  EXT.PUPL.SIZE  IMAGE HEIGHT
99999.999996   2.000000  99999.999996   9067.684238   9067.684238   2.318613   -181.353685
MAGNIFICATION  SEMIANG.FIELD  FRNT.VTX.DIST  BARREL LENGTH  BACK VTX.DIST  SEMIANG.FIELD  DEMAGNIFICATN
1.159306      .572939  -21024.366078   1.617500  99999.999996   .494212      .862585
APT.STOP SIZE  APT.STOP DIST  FROM SRFCE.NO  TRACK LENGTH  FLD.STOP SIZE  FLD.STOP DIST  FROM.SRFCE.NO
2.000000      0.000000      1.000000  99999.999996   362.707370  -21025.983578   4.000000
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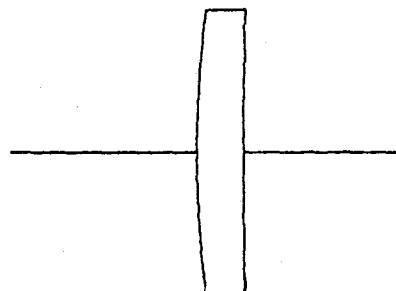
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DESIGN NO. 64325M. SHIFT LENS.

103177- 0

0	-2	1	.750000=PM(1)	0.000000=SIN UM(1)	0.000000=HP(1)	.010000=TAN UP(1)
0	-2	1	.750000=PM(2)	0.000000=SIN UM(2)	0.000000=HP(2)	.010000=TAN UP(2)
				.63280	.48610	.65630

25.4MM=UNIT OF LENGTH



FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCE	FNTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
99999.999996	0.000000	.138979	-37.976025	-.000000	-.138472	-37.976025
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
99999.999996	1.500000	999999.999996	25.317350	25.317350	1.494531	-.379760
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
0.000000	.572939	-37.726025	.250000	999999.999996	.575035	0.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
1.500000	0.000000	1.000000	999999.999996	.759520	-37.976025	2.000000

DESIGN NO.64375M. SHIFT LENS.

103177- 0

			RADIUS,ETC	AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	1ST.CA	2ND.CA	LENGTH STATION
0	-2	1	.750000=PM(1)	0.000000=SIN UM(1)	0.000000=HP(1)	.010000=TAN UP(1)					
0	-2	1	.750000=PM(2)	0.000000=SIN UM(2)	0.000000=HP(2)	.010000=TAN UP(2)					
				.63280	.48610	.65630	25.4MM=UNIT OF				
				0.0000	1.00000	1.00000	1.00000		0.00	0.00	1.4500
1	CYL		5.6253	.2500	1.79883	1.82776	1.79609	805.254 SF6	.50	0.00	1.4500
2	SPH		30.3365	1.2000	1.00000	1.00000	1.00000	0.000	.50	0.00	1.2000
3	SPH		INFINITE	-7.2364	1.00000	1.00000	1.00000	0.000	0.00	0.00	0.0000

FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
99999.999996	0.000000	.138979	-37.976025	-.000000	-.138472	-37.976025
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
99999.999996	1.500000	999999.999996	25.317350	25.317350	1.494531	-.379760
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
0.000000	.572939	-37.726025	.250000	999999.999996	.575035	0.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCF.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCF.NO
1.500000	0.000000	1.000000	999999.999996	.759520	-37.976025	2.000000

FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

OBJECT DSTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
99999.999996	0.000000	-.031496	8.696300	-.169853	-.138472	8.436446
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
99999.999996	1.500000	999999.999996	-5.737533	-5.737533	1.494531	.086063
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
0.000000	.572939	8.686446	.250000	999999.999996	.575035	0.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCF.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCF.NO
1.500000	0.000000	1.000000	999999.999996	.172126	8.436446	2.000000

 DESIGN NO. 64375M
 OF FOUR QUALITY

PART II

EVALUATION OF WAVE ABERRATION IN TERMS OF LEGENDRE
POLYNOMIALS

NOTES

In optical systems where the aperture is square or rectangular the wave aberration function $W(x,y)$ can be expanded in terms of Legendre orthogonal polynomials

$$W(x,y) = \sum \sum A'_{nm} P_n(x) P_m(y)$$

where x,y are rectangular coordinates in the exit pupil normalized to an extreme value of unity and P_n, P_m are Legendre polynomials of order n and m respectively. In practice even if the series is truncated beyond terms where $m+n=8$, the expansion provides an excellent approximation.

The advantage of this polynomial expansion is that the Strehl Intensity Ratio, SIR, is related to the coefficients of the expansion by the formula

$$SIR = 1 - 4\pi^2 \sum \sum A_{nm}^2$$

where

$$A_{nm} = A'_{nm} / \sqrt{(2n+1)(2m+1)}$$

A system where $SIR > 80\%$ is generally considered as an acceptable performance, hence

$$\sqrt{\sum \sum A_{nm}^2} < 0.07\lambda$$

Therefore any aberration coefficient $A_{nm} > 0.07\lambda$ denotes a large aberration.

Phase G

\$ASSIGN 15,15

\$TD

DESIGN NO.64325G, JPL CORRELATOR, RANGE CURVATURE CORRECTOR, SHIFT AND AUXILIARY LENSES 103177- 0

2	-2	1	.332500=PM(1)	0.000000=SIN UM(1)	1.000000=HP(1)	0.000000=TAN UP(1)					
2	-2	1	1.650000=PM(2)	0.000000=SIN UM(2)	.025000=HP(2)	0.000000=TAN UP(2)					
				.63280	.48610	.65630	25.4MM=UNIT OF LENGTH				
			RADIUS,ETC	AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	1ST.CA	2ND.CA	STATION
				0.0000	1.00000	1.00000	1.00000		0.00	0.00	132.0518
1	RPH	*****	.0000	18.0000	1.00000	1.00000	1.00000	-.000 XXXXXX	0.00	0.00	132.0518
2	SPH		-10.4469	1.8839	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	114.0518
3	SPH		-13.4336	.0307	1.00000	1.00000	1.00000	0.000	0.00	0.00	112.1679
4	SPH		31.1330	1.3652	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	112.1372
5	SPH		-24.5830	5.5793	1.00000	1.00000	1.00000	0.000	0.00	0.00	110.7720
6	SPH		-14.9126	1.3477	1.50671	1.51423	1.50592	508.612 ZKN7	0.00	0.00	105.1927
7	SPH		15.8548	3.6306	1.00000	1.00000	1.00000	0.000	0.00	0.00	103.8450
8	SPH		24.5464	1.3652	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	100.2144
9	SPH		-34.5304	3.5303	1.00000	1.00000	1.00000	0.000	0.00	0.00	98.8492
10	SPH		13.1420	1.8553	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	95.3189
11	SPH		10.5330	16.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	93.4636
12	RTN		-.0587	-.1653	1.00000	1.00000	1.00000	0.000	0.00	0.00	77.4636
13	SPH		-6.6582	.3305	1.79883	1.82776	1.79609	805.254 SF6	0.00	0.00	77.6288
14	CYL		6.6582	-.1653	1.00000	1.00000	1.00000	0.000	0.00	0.00	77.2983
15	RTN		.0587	1.2919	1.00000	1.00000	1.00000	0.000	0.00	0.00	77.4636
16	RTN		.0587	-.1630	1.00000	1.00000	1.00000	0.000	0.00	0.00	76.1717
17	CYL		7.3958	.3260	1.79883	1.82776	1.79609	805.254 SF6	0.00	0.00	76.3347
18	SPH		-7.7230	-.1630	1.00000	1.00000	1.00000	0.000	0.00	0.00	76.0087
19	RTN		-.0587	1.2522	1.00000	1.00000	1.00000	0.000	0.00	0.00	76.1717
20	CYL		5.6253	.2500	1.79883	1.82776	1.79609	805.254 SF6	0.00	0.00	74.9195
21	SPH		30.3365	17.9790	1.00000	1.00000	1.00000	0.000	0.00	0.00	74.6695
22	SPH		-10.5330	1.8553	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	56.6905
23	SPH		-13.1420	3.5303	1.00000	1.00000	1.00000	0.000	0.00	0.00	54.8352

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24	SPH	34.5304	1.3652	1.74969	1.77469	1.74729	755.276	SF4	0.00	0.00	51.3049
25	SPH	-24.5464	3.6303	1.00000	1.00000	1.00000	0.000		0.00	0.00	49.9397
26	SPH	-15.8548	1.3477	1.50671	1.51423	1.50592	508.612	ZKN7	0.00	0.00	46.3094
27	SPH	14.9126	5.5793	1.00000	1.00000	1.00000	0.000		0.00	0.00	44.9617
28	SPH	24.5830	1.3652	1.74969	1.77469	1.74729	755.276	SF4	0.00	0.00	39.3824
29	SPH	-31.1330	.0307	1.00000	1.00000	1.00000	0.000		0.00	0.00	38.0172
30	SPH	13.4336	1.8839	1.74969	1.77469	1.74729	755.276	SF4	0.00	0.00	37.9865
31	SPH	10.4469	13.8798	1.00000	1.00000	1.00000	0.000		0.00	0.00	36.1026
32	CYL	3.6547	.6500	1.63269	1.64909	1.63108	636.353	F6	0.00	0.00	22.2228
33	CYL	-6.4870	.2149	1.00000	1.00000	1.00000	0.000		0.00	0.00	21.5728
34	CYL	-5.2748	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	21.3579
35	CYL	INFINITE	9.5469	1.00000	1.00000	1.00000	0.000		0.00	0.00	21.0079
36	CYL	INFINITE	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	11.4610
37	CYL	2.2357	.6000	1.63269	1.64909	1.63108	636.353	F6	0.00	0.00	11.1110
38	CYL	-2.1304	.2026	1.00000	1.00000	1.00000	0.000		0.00	0.00	10.5110
39	CYL	2.5833	.6000	1.63269	1.64909	1.63108	636.353	F6	0.00	0.00	10.3084
40	CYL	-3.2796	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	9.7084
41	CYL	INFINITE	2.3284	1.00000	1.00000	1.00000	0.000		0.00	0.00	9.3584
42	CYL	-1.7898	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	7.0300
43	CYL	-5.6466	.0200	1.00000	1.00000	1.00000	0.000		0.00	0.00	6.6800
44	CYL	INFINITE	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	6.6600
45	CYL	2.4613	.0200	1.00000	1.00000	1.00000	0.000		0.00	0.00	6.3100
46	CYL	.9311	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	6.2900
47	CYL	1.2905	3.3600	1.00000	1.00000	1.00000	0.000		0.00	0.00	5.9400
48	RTN	.0761	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	2.5800
49	CYL	INFINITE	.4000	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	2.5800
50	CYL	-1.2000	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	2.1800
51	RTN	-.0761	.5000	1.00000	1.00000	1.00000	0.000		0.00	0.00	2.1800
52	CYL	1.2000	.4000	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	1.6800
53	CYL	INFINITE	1.2800	1.00000	1.00000	1.00000	0.000		0.00	0.00	1.2800
54	SPH	INFINITE	-.0305	1.00000	1.00000	1.00000	0.000		0.00	0.00	-.0000

TABLE OF CONSTANTS

1 4.069600E+05

3.906200E-01

-4.557300E+03

1.106000E+02

0.000000E+00

FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
-27.670022	999999.999996	999999.999996	999999.999996	372040.205900	182809.719947	1.210148
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
1.000000	999999.999996	41.609055	-20.445409	-40.196955	4547.819820	-.966063
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-.966063	0.000000	131.981909	130.771761	-158.441783	.000303	-1.035130
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
0.000000	1.248489	19.000000	159.651930	1.932125	1.210148	53.000000

FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

OBJECT DSTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
175.467238	999999.999996	198.391415	4.166255	-3.781136	.385119	1.310471
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
.025000	999999.999996	-53.171890	9.663495	11.809819	.078354	-.005553
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-.222106	0.000000	132.082232	130.771761	44.695477	-.343805	-4.502346
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
0.000000	6.479563	35.000000	-43.385006	0.000000	2.109813	47.000000

ORIGINAL PAGE IS
OF POOR QUALITY

Field point #0, $r_o - r_c = 0$

ORIGINAL PAGE IS
OF POOR QUALITY

WAVE ABERRATION (WAVELENGTH UNITS)

-.00	-.12	-.18	-.19	-.17	-.14	-.10	-.05	-.03	-.01	-.01	-.03	-.05	-.10	-.14	-.17	-.19	-.18	-.12	-.00
-.02	-.13	-.18	-.19	-.17	-.13	-.09	-.05	-.02	-.00	-.00	-.02	-.05	-.09	-.13	-.17	-.19	-.18	-.13	-.02
-.03	-.14	-.19	-.19	-.17	-.13	-.09	-.04	-.01	.00	.00	-.01	-.04	-.09	-.13	-.17	-.19	-.19	-.14	-.03
-.03	-.14	-.19	-.20	-.17	-.13	-.08	-.04	-.01	.01	.01	-.01	-.04	-.08	-.13	-.17	-.20	-.19	-.14	-.03
-.04	-.15	-.20	-.20	-.18	-.13	-.09	-.04	-.01	.01	.01	-.01	-.04	-.09	-.13	-.18	-.20	-.20	-.15	-.04
-.05	-.16	-.20	-.20	-.18	-.14	-.09	-.04	-.01	.01	.01	-.01	-.04	-.09	-.14	-.18	-.20	-.20	-.16	-.05
-.06	-.17	-.21	-.21	-.18	-.14	-.09	-.05	-.01	.00	.00	-.01	-.05	-.09	-.14	-.18	-.21	-.21	-.17	-.06
-.06	-.17	-.21	-.21	-.18	-.14	-.09	-.05	-.02	.00	.00	-.02	-.05	-.09	-.14	-.18	-.21	-.21	-.17	-.06
-.07	-.17	-.21	-.21	-.19	-.14	-.09	-.05	-.02	-.00	-.00	-.02	-.05	-.09	-.14	-.19	-.21	-.21	-.17	-.07
-.06	-.17	-.21	-.22	-.19	-.14	-.10	-.05	-.02	-.00	-.00	-.02	-.05	-.10	-.14	-.19	-.22	-.21	-.17	-.06
-.06	-.16	-.21	-.21	-.18	-.14	-.09	-.05	-.02	-.00	-.00	-.02	-.05	-.09	-.14	-.18	-.21	-.21	-.16	-.06
-.05	-.16	-.21	-.21	-.18	-.14	-.09	-.05	-.02	-.00	-.00	-.02	-.05	-.09	-.14	-.18	-.21	-.21	-.16	-.05
-.03	-.15	-.19	-.20	-.17	-.13	-.09	-.04	-.01	.00	.00	-.01	-.04	-.09	-.13	-.17	-.20	-.19	-.15	-.03
-.02	-.12	-.18	-.18	-.16	-.12	-.08	-.04	-.00	.01	.01	-.00	-.04	-.08	-.12	-.16	-.18	-.18	-.12	-.02
.01	-.10	-.15	-.16	-.14	-.11	-.06	-.02	.01	.02	.02	.01	-.02	-.06	-.11	-.14	-.16	-.15	-.10	.01
.05	-.07	-.13	-.14	-.12	-.09	-.05	-.01	.02	.04	.04	.02	-.01	-.05	-.09	-.12	-.14	-.13	-.07	.05
.09	-.04	-.10	-.11	-.10	-.06	-.02	.01	.04	.06	.06	.04	.01	-.02	-.06	-.10	-.11	-.10	-.04	.09
.13	.01	-.06	-.08	-.06	-.03	.00	.04	.07	.08	.08	.07	.04	.00	-.03	-.06	-.08	-.06	.01	.13
.19	.06	-.01	-.03	-.02	.00	.04	.07	.10	.11	.11	.10	.07	.04	.00	-.02	-.03	-.01	.06	.19
.25	.11	.04	.01	.02	.04	.08	.11	.14	.15	.15	.14	.11	.08	.04	.02	.01	.04	.11	.25

FIELD POINT NO.0

.6328-MCR=REF.WVLTH

.6328-MCR=WVF.WVLTH

RE-NORMALIZED LEGENDRE COEFFICIENTS

A(0,0)	A(0,1)	A(0,2)	A(0,3)	A(0,4)	A(0,5)	A(0,6)	A(0,7)	A(0,8)
0.000000	0.000000	-.019964	.000000	.069313	.000000	-.000211	.000000	0.000000
A(1,0)	A(1,1)	A(1,2)	A(1,3)	A(1,4)	A(1,5)	A(1,6)	A(1,7)	
0.000000	-.000000	-.010060	-.000000	.000149	-.000000	.000048	0.000000	
A(2,0)	A(2,1)	A(2,2)	A(2,3)	A(2,4)	A(2,5)	A(2,6)		
.037630	-.000000	.012593	.000000	.000018	.000000	0.000000		
A(3,0)	A(3,1)	A(3,2)	A(3,3)	A(3,4)	A(3,5)			
-.013770	-.000000	.000284	-.000000	.000124	0.000000			
A(4,0)	A(4,1)	A(4,2)	A(4,3)	A(4,4)				
.000006	.000000	-.000110	.000000	0.000000				
A(5,0)	A(5,1)	A(5,2)	A(5,3)					
.000094	.000000	.000089	0.000000					
A(6,0)	A(6,1)	A(6,2)						
.000042	-.000000	0.000000						
A(7,0)	A(7,1)							
-.000024	0.000000							
A(8,0)								
0.000000								

ORIGINAL PAGE IS
OF POOR QUALITY

Field point #1, $r_o - r_c = 1.0$

ORIGINAL FILED
DE. FOUR QUALITY

WAVE ABERRATION (WAVELENGTH UNITS)

-.17	-.30	-.37	-.39	-.38	-.35	-.31	-.28	-.25	-.24	-.24	-.25	-.28	-.31	-.35	-.38	-.39	-.37	-.30	-.17
-.13	-.26	-.32	-.34	-.33	-.30	-.26	-.22	-.20	-.18	-.18	-.20	-.22	-.26	-.30	-.33	-.34	-.32	-.26	-.13
-.10	-.22	-.29	-.30	-.29	-.26	-.22	-.18	-.15	-.14	-.14	-.15	-.18	-.22	-.26	-.29	-.30	-.29	-.22	-.10
-.08	-.19	-.25	-.27	-.25	-.22	-.18	-.14	-.11	-.10	-.10	-.11	-.14	-.18	-.22	-.25	-.27	-.25	-.19	-.08
-.05	-.17	-.23	-.24	-.23	-.19	-.15	-.11	-.08	-.07	-.07	-.08	-.11	-.15	-.19	-.23	-.24	-.23	-.17	-.05
-.03	-.15	-.20	-.22	-.20	-.17	-.13	-.09	-.06	-.04	-.04	-.06	-.09	-.13	-.17	-.20	-.22	-.20	-.15	-.03
-.01	-.13	-.19	-.20	-.19	-.15	-.11	-.07	-.04	-.03	-.03	-.04	-.07	-.11	-.15	-.19	-.20	-.19	-.13	-.01
-.00	-.12	-.18	-.19	-.17	-.14	-.10	-.06	-.03	-.01	-.01	-.03	-.06	-.10	-.14	-.17	-.19	-.18	-.12	-.00
.01	-.11	-.17	-.18	-.16	-.13	-.09	-.05	-.02	-.01	-.01	-.02	-.05	-.09	-.13	-.16	-.18	-.17	-.11	.01
.03	-.10	-.16	-.18	-.16	-.13	-.09	-.05	-.02	-.00	-.00	-.02	-.05	-.09	-.13	-.16	-.18	-.16	-.10	.03
.03	-.09	-.15	-.17	-.16	-.12	-.08	-.05	-.02	-.00	-.00	-.02	-.05	-.08	-.12	-.16	-.17	-.15	-.09	.03
.04	-.09	-.15	-.17	-.16	-.12	-.09	-.05	-.02	-.01	-.01	-.02	-.05	-.09	-.12	-.16	-.17	-.15	-.09	.04
.05	-.08	-.15	-.17	-.16	-.13	-.09	-.05	-.03	-.01	-.01	-.03	-.05	-.09	-.13	-.16	-.17	-.15	-.08	.05
.06	-.07	-.15	-.17	-.16	-.13	-.10	-.06	-.03	-.02	-.02	-.03	-.06	-.10	-.13	-.16	-.17	-.15	-.07	.06
.07	-.07	-.14	-.17	-.16	-.14	-.10	-.07	-.04	-.03	-.03	-.04	-.07	-.10	-.14	-.16	-.17	-.14	-.07	.07
.08	-.06	-.14	-.17	-.16	-.14	-.11	-.08	-.05	-.04	-.04	-.05	-.08	-.11	-.14	-.16	-.17	-.14	-.06	.08
.09	-.05	-.14	-.17	-.17	-.14	-.11	-.08	-.06	-.05	-.05	-.06	-.08	-.11	-.14	-.17	-.17	-.14	-.05	.09
.11	-.04	-.13	-.17	-.17	-.15	-.12	-.09	-.07	-.05	-.05	-.07	-.09	-.12	-.15	-.17	-.17	-.13	-.04	.11
.13	-.02	-.12	-.16	-.17	-.15	-.12	-.10	-.08	-.06	-.06	-.08	-.10	-.12	-.15	-.17	-.16	-.12	-.02	.13
.16	-.01	-.10	-.15	-.16	-.15	-.13	-.10	-.08	-.07	-.07	-.08	-.10	-.13	-.15	-.16	-.15	-.10	-.01	.16

FIELD POINT NO.1

.6328-MCR=REF.WVLTH

.6328-MCR=WVF.WVLTH

RE-NORMALIZED LEGENDRE COEFFICIENTS

A(0,0)	A(0,1)	A(0,2)	A(0,3)	A(0,4)	A(0,5)	A(0,6)	A(0,7)	A(0,8)
0.000000	0.000000	.009609	.000000	.069871	.000000	-.000372	.000000	0.000000
A(1,0)	A(1,1)	A(1,2)	A(1,3)	A(1,4)	A(1,5)	A(1,6)	A(1,7)	
0.000000	.000000	-.016271	.000000	-.000591	.000000	.000067	0.000000	
A(2,0)	A(2,1)	A(2,2)	A(2,3)	A(2,4)	A(2,5)	A(2,6)		
-.035815	-.000000	.012508	.000000	.000120	.000000	0.000000		
A(3,0)	A(3,1)	A(3,2)	A(3,3)	A(3,4)	A(3,5)			
-.014691	.000000	.000426	.000000	.000272	0.000000			
A(4,0)	A(4,1)	A(4,2)	A(4,3)	A(4,4)				
-.000083	-.000000	.000238	-.000000	0.000000				
A(5,0)	A(5,1)	A(5,2)	A(5,3)					
-.000149	.000000	-.000019	0.000000					
A(6,0)	A(6,1)	A(6,2)						
.000034	-.000000	0.000000						
A(7,0)	A(7,1)							
-.000016	0.000000							
A(8,0)								
0.000000								

.083035=RMS WAVE DEFORMATION

Field point #2, $r_o - r_c = -1.0$

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WAVE ABERRATION (WAVELENGTH UNITS)

.19	.02	-.08	-.13	-.15	-.14	-.12	-.10	-.08	-.07	-.07	-.08	-.10	-.12	-.14	-.15	-.13	-.08	.02	.19
.20	.02	-.07	-.12	-.13	-.12	-.10	-.08	-.06	-.05	-.05	-.06	-.08	-.10	-.12	-.13	-.12	-.07	.02	.20
.19	.02	-.07	-.12	-.13	-.11	-.09	-.07	-.05	-.03	-.03	-.05	-.07	-.09	-.11	-.13	-.12	-.07	.02	.19
.19	.03	-.07	-.11	-.12	-.11	-.08	-.05	-.04	-.02	-.02	-.04	-.05	-.08	-.11	-.12	-.11	-.07	.03	.19
.18	.02	-.07	-.11	-.11	-.10	-.07	-.05	-.03	-.02	-.02	-.03	-.05	-.07	-.10	-.11	-.11	-.07	.02	.18
.18	.02	-.07	-.11	-.11	-.10	-.07	-.04	-.02	-.01	-.01	-.02	-.04	-.07	-.10	-.11	-.11	-.07	.02	.18
.17	.02	-.07	-.11	-.11	-.09	-.07	-.04	-.02	-.01	-.01	-.02	-.04	-.07	-.09	-.11	-.11	-.07	.02	.17
.17	.02	-.07	-.11	-.11	-.09	-.07	-.04	-.02	-.01	-.01	-.02	-.04	-.07	-.09	-.11	-.11	-.07	.02	.17
.17	.02	-.07	-.10	-.11	-.09	-.06	-.04	-.01	-.00	-.00	-.01	-.04	-.06	-.09	-.11	-.10	-.07	.02	.17
.18	.02	-.07	-.10	-.11	-.09	-.06	-.04	-.01	-.00	-.00	-.01	-.04	-.06	-.09	-.11	-.10	-.07	.02	.18
.18	.03	-.06	-.10	-.11	-.09	-.06	-.03	-.01	-.00	-.00	-.01	-.03	-.06	-.09	-.11	-.10	-.06	.03	.18
.18	.02	-.06	-.10	-.10	-.09	-.06	-.03	-.01	.00	.00	-.01	-.03	-.06	-.09	-.10	-.10	-.06	.02	.18
.19	.04	-.05	-.09	-.10	-.08	-.06	-.03	-.01	.00	.00	-.01	-.03	-.06	-.08	-.10	-.09	-.05	.04	.19
.21	.05	-.04	-.08	-.09	-.07	-.05	-.02	-.00	.01	.01	-.00	-.02	-.05	-.07	-.09	-.08	-.04	.05	.21
.23	.07	-.02	-.06	-.08	-.06	-.04	-.02	.00	.01	.01	.00	-.02	-.04	-.06	-.08	-.06	-.02	.07	.23
.26	.09	-.00	-.05	-.06	-.05	-.03	-.00	.01	.03	.03	.01	-.00	-.03	-.05	-.06	-.05	-.00	.09	.26
.28	.12	.02	-.03	-.04	-.03	-.02	.01	.03	.04	.04	.03	.01	-.02	-.03	-.04	-.03	.02	.12	.28
.32	.15	.05	-.00	-.02	-.01	.00	.03	.04	.05	.05	.04	.03	.00	-.01	-.02	-.00	.05	.15	.32
.37	.19	.09	.03	.01	.02	.03	.05	.07	.08	.08	.07	.05	.03	.02	.01	.03	.09	.19	.37
.43	.24	.13	.07	.05	.05	.06	.08	.09	.10	.10	.09	.08	.06	.05	.05	.07	.13	.24	.43

FIELD POINT NO.2

.6328-MCR=REF.WVLTH

.6328-MCR=WVF.WVLTH

RE-NORMALIZED LEGENDRE COEFFICIENTS

A(0,0)	A(0,1)	A(0,2)	A(0,3)	A(0,4)	A(0,5)	A(0,6)	A(0,7)	A(0,8)
0.000000	0.000000	.058083	.000000	.069459	.000000	-.000007	.000000	0.000000
A(1,0)	A(1,1)	A(1,2)	A(1,3)	A(1,4)	A(1,5)	A(1,6)	A(1,7)	
0.000000	-.000000	-.005737	-.000000	.000604	.000000	.000004	0.000000	
A(2,0)	A(2,1)	A(2,2)	A(2,3)	A(2,4)	A(2,5)	A(2,6)		
.020051	.000000	.012819	.000000	.000122	.000000	0.000000		
A(3,0)	A(3,1)	A(3,2)	A(3,3)	A(3,4)	A(3,5)			
-.013683	.000000	-.000009	.000000	-.000096	0.000000			
A(4,0)	A(4,1)	A(4,2)	A(4,3)	A(4,4)				
.000205	-.000000	.000026	-.000000	0.000000				
A(5,0)	A(5,1)	A(5,2)	A(5,3)					
.000014	-.000000	.000019	0.000000					
A(6,0)	A(6,1)	A(6,2)						
-.000067	.000000	0.000000						
A(7,0)	A(7,1)							
-.000031	0.000000							
A(8,0)								
0.000000								

Phase I

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2  -2  1      .332500=PM(1)      0.000000=SIN UM(1)      1.000000=HP(1)      0.000000=TAN UP(1)
2  -2  1      1.650000=PM(2)      0.000000=SIN UM(2)      0.000000=HP(2)      0.000000=TAN UP(2)

```

	RADIUS,ETC	AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	25.4MM=UNIT OF LENGTH	1ST.CA	2ND.CA	STATION
		0.0000	1.00000	1.00000	1.00000			0.00	0.00	130.7153
1 RTN	-.0053	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	130.7153
2 TRN	-5.4900	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	130.7153
3 RPH *****	.0000	0.0000	1.00000	1.00000	1.00000	-.056 XXXXXX		0.00	0.00	130.7153
4 TRN	5.4900	18.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	130.7153
5 SPH	-10.4469	1.8839	1.74969	1.77469	1.74729	755.276 SF4		0.00	0.00	112.7153
6 SPH	-13.4336	.0307	1.00000	1.00000	1.00000	0.000		0.00	0.00	110.8314
7 SPH	31.1330	1.3652	1.74969	1.77469	1.74729	755.276 SF4		0.00	0.00	110.8007
8 SPH	-24.5830	5.5793	1.00000	1.00000	1.00000	0.000		0.00	0.00	109.4355
9 SPH	-14.9126	1.3477	1.50671	1.51423	1.50592	508.612 ZKN7		0.00	0.00	103.8562
10 SPH	15.8548	3.6306	1.00000	1.00000	1.00000	0.000		0.00	0.00	102.5085
11 SPH	24.5464	1.3652	1.74969	1.77469	1.74729	755.276 SF4		0.00	0.00	98.8779
12 SPH	-34.5304	3.5303	1.00000	1.00000	1.00000	0.000		0.00	0.00	97.5127
13 SPH	13.1420	1.8553	1.74969	1.77469	1.74729	755.276 SF4		0.00	0.00	93.9824
14 SPH	10.5330	16.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	92.1271
15 RTN	-.0587	-.1653	1.00000	1.00000	1.00000	0.000		0.00	0.00	76.1271
16 SPH	-6.6582	.3305	1.79883	1.82776	1.79609	805.254 SF6		0.00	0.00	76.2923
17 CYL	-6.6582	-.1653	1.00000	1.00000	1.00000	0.000		0.00	0.00	75.9618
18 RTN	.0587	1.2919	1.00000	1.00000	1.00000	0.000		0.00	0.00	76.1271
19 RTN	.0587	-.1630	1.00000	1.00000	1.00000	0.000		0.00	0.00	74.8352
20 CYL	-7.3958	.3260	1.79883	1.82776	1.79609	805.254 SF6		0.00	0.00	74.9982
21 SPH	-7.7230	-.1630	1.00000	1.00000	1.00000	0.000		0.00	0.00	74.6722
22 RTN	-.0587	1.2522	1.00000	1.00000	1.00000	0.000		0.00	0.00	74.8352
23 RTN	-.0223	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	73.5830

24	CYL	5.6253	.2500	1.79883	1.80000	1.79609	805.254	SF6	0.00	0.00	73.5830
25	SPH	30.3365	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	73.3330
26	RTN	.0223	17.9790	1.00000	1.00000	1.00000	0.000		0.00	0.00	73.3330
27	SPH	-10.5330	1.8553	1.74969	1.77469	1.74729	755.276	SF4	0.00	0.00	55.3540
28	SPH	-13.1420	3.5303	1.00000	1.00000	1.00000	0.000		0.00	0.00	53.4987
29	SPH	34.5304	1.3652	1.74969	1.77469	1.74729	755.276	SF4	0.00	0.00	49.9684
30	SPH	-24.5464	3.6303	1.00000	1.00000	1.00000	0.000		0.00	0.00	48.6032
31	SPH	-15.8548	1.3477	1.50671	1.51423	1.50592	508.612	ZKN7	0.00	0.00	44.9729
32	SPH	14.9126	5.5793	1.00000	1.00000	1.00000	0.000		0.00	0.00	43.6252
33	SPH	24.5830	1.3652	1.74969	1.77469	1.74729	755.276	SF4	0.00	0.00	38.0459
34	SPH	-31.1330	.0307	1.00000	1.00000	1.00000	0.000		0.00	0.00	36.6807
35	SPH	13.4336	1.8839	1.74969	1.77469	1.74729	755.276	SF4	0.00	0.00	36.6500
36	SPH	10.4469	17.2604	1.00000	1.00000	1.00000	0.000		0.00	0.00	34.7661
37	CYL	4.7640	.6500	1.75759	1.77722	1.75566	.028	XXXXXX	0.00	0.00	17.5057
38	CYL	-4.4429	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	16.8557
39	CYL	-3.6353	0.0000	1.61868	1.63477	1.61711	.029	XXXXXX	0.00	0.00	16.8557
40	CYL	28.9670	8.3670	1.00000	1.00000	1.00000	0.000		0.00	0.00	16.8557
41	CYL	3.3555	.1750	1.79583	1.82462	1.79308	.040	XXXXXX	0.00	0.00	8.4886
42	CYL	-2.1443	5.7336	1.00000	1.00000	1.00000	0.000		0.00	0.00	8.3136
43	RTN	.0761	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	2.5800
44	CYL	INFINITE	.4000	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	2.5800
45	CYL	-1.2000	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	2.1800
46	RTN	-.0761	.5000	1.00000	1.00000	1.00000	0.000		0.00	0.00	2.1800
47	CYL	1.2000	.4000	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	1.6800
48	CYL	INFINITE	1.2800	1.00000	1.00000	1.00000	0.000		0.00	0.00	1.2800
49	SPH	INFINITE	-.0226	1.00000	1.00000	1.00000	0.000		0.00	0.00	-.0000

TABLE OF CONSTANTS

3	4.069600E+05	3.906200E-01	-4.557300E+03	1.106000E+02	6.563200E+03
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FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DISTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
-27.670022	999999.999996	999999.999996	999999.999996	372250.382545	182913.015351	1.254943
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
1.000000	999999.999996	41.609055	-20.445409	-40.196955	4550.388522	-.966063

MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATION
-966063	0.000000	130.690195	129.435252	-157.105274	.000303	-1.035130
APT.STOP SIZE	APT.STOP DIST	FROM SRFC.E.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
0.000000	1.248490	22.000000	158.360217	1.932125	1.254943	48.000000

FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

OBJECT DSTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
175.467238	999999.999996	0.000000	0.000000	0.000000	999999.999996	1.302600
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
0.000000	999999.999996	-53.171890	9.582985	11.689796	999999.999996	0.000000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATION
-219849	0.000000	130.737852	129.435252	46.031986	0.000000	-4.548573
APT.STOP SIZE	APT.STOP DIST	FROM SRFC.E.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
0.000000	0.000000	0.000000	-44.729386	0.000000	4.476031	42.000000

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Field point #0, $r_o - r_c = 0$

032377-347

•6328=REFERENCE FOCUS WAVELENGTH

•6328=RAY TRACING WAVELENGTH

400 RAYS THROUGH ENTRANCE PUPIL

400 RAYS THROUGH EXIT PUPIL

0 VIGNETTED RAYS

A grid of 20 rows and 20 columns of asterisks on a black background. The asterisks are arranged in a regular, repeating pattern across the entire image.

WAVE ABERRATION (WAVELENGTH UNITS)

.13	-.07	-.19	-.24	-.24	-.21	-.17	-.13	-.10	-.09	-.10	-.13	-.17	-.23	-.29	-.34	-.37	-.37	-.31	-.17
.14	-.06	-.18	-.22	-.22	-.19	-.15	-.11	-.08	-.07	-.07	-.10	-.14	-.20	-.26	-.31	-.34	-.33	-.27	-.13
.15	-.05	-.17	-.21	-.21	-.18	-.14	-.09	-.06	-.05	-.05	-.08	-.12	-.17	-.23	-.28	-.32	-.31	-.24	-.11
.15	-.04	-.16	-.20	-.20	-.17	-.12	-.08	-.05	-.03	-.04	-.06	-.10	-.16	-.21	-.26	-.30	-.29	-.22	-.08
.16	-.04	-.15	-.19	-.19	-.16	-.11	-.07	-.04	-.02	-.02	-.05	-.09	-.14	-.20	-.25	-.28	-.27	-.21	-.07
.16	-.04	-.15	-.19	-.19	-.15	-.11	-.06	-.03	-.01	-.01	-.04	-.08	-.13	-.19	-.24	-.26	-.25	-.19	-.05
.16	-.04	-.15	-.19	-.18	-.15	-.10	-.06	-.03	-.01	-.01	-.03	-.07	-.12	-.18	-.23	-.25	-.24	-.17	-.04
.16	-.04	-.15	-.19	-.18	-.15	-.10	-.06	-.02	-.00	-.00	-.03	-.07	-.12	-.17	-.22	-.24	-.24	-.17	-.03
.16	-.04	-.15	-.19	-.18	-.15	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.11	-.17	-.22	-.24	-.23	-.16	-.02
.17	-.04	-.14	-.19	-.18	-.15	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.11	-.16	-.21	-.24	-.22	-.16	-.01
.16	-.03	-.14	-.18	-.18	-.15	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.11	-.16	-.21	-.23	-.22	-.15	-.01
.17	-.03	-.14	-.18	-.18	-.15	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.11	-.16	-.21	-.23	-.22	-.15	-.01
.18	-.02	-.13	-.17	-.17	-.14	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.11	-.16	-.21	-.23	-.22	-.15	-.01
.19	-.00	-.12	-.17	-.17	-.14	-.10	-.05	-.02	-.00	-.00	-.02	-.06	-.11	-.16	-.21	-.23	-.22	-.15	-.00
.21	.00	-.11	-.16	-.16	-.13	-.09	-.05	-.01	.00	.00	-.02	-.05	-.10	-.16	-.20	-.23	-.22	-.14	.00
.23	.03	-.09	-.14	-.15	-.12	-.08	-.04	-.01	.01	.01	-.01	-.05	-.10	-.15	-.20	-.22	-.21	-.14	.01
.26	.05	-.07	-.12	-.13	-.11	-.07	-.03	.00	.02	.02	-.01	-.04	-.09	-.15	-.19	-.22	-.20	-.13	.02
.29	.08	-.04	-.10	-.11	-.09	-.05	-.01	.02	.03	.03	.01	-.03	-.08	-.14	-.18	-.21	-.19	-.12	.02
.33	.12	-.01	-.07	-.08	-.06	-.03	.01	.03	.05	.04	.02	-.02	-.07	-.12	-.17	-.20	-.18	-.11	.03
.38	.16	.03	-.03	-.05	-.03	-.00	.03	.06	.07	.06	.04	-.00	-.05	-.11	-.16	-.18	-.17	-.10	.05

DESIGN NO.64325IX, JPL CORRELATOR, RCC, SHIFT LENS, DUMMY AZIMUTH TELESCOPE.

032377 347

FIELD POINT NO.0

.6328-MCR=REF.WVLTH

.6328-MCR=WVF.WVLTH

RE-NORMALIZED LEGENDRE COEFFICIENTS

A(0,0)	A(0,1)	A(0,2)	A(0,3)	A(0,4)	A(0,5)	A(0,6)	A(0,7)	A(0,8)
0.000000	0.000000	.011533	-.016490	.091987	-.000499	-.001422	.000179	0.000000
A(1,0)	A(1,1)	A(1,2)	A(1,3)	A(1,4)	A(1,5)	A(1,6)	A(1,7)	
0.000000	.000576	-.007612	.000990	.000500	-.000608	.000005	0.000000	
A(2,0)	A(2,1)	A(2,2)	A(2,3)	A(2,4)	A(2,5)	A(2,6)		
.000139	-.013614	.003558	-.000431	-.000142	.000015	0.000000		
A(3,0)	A(3,1)	A(3,2)	A(3,3)	A(3,4)	A(3,5)			
-.014072	.000942	.000068	.000101	.000029	0.000000			
A(4,0)	A(4,1)	A(4,2)	A(4,3)	A(4,4)				
.000022	-.000038	-.000073	-.000045	0.000000				
A(5,0)	A(5,1)	A(5,2)	A(5,3)					
.000008	-.000086	.000074	0.000000					
A(6,0)	A(6,1)	A(6,2)						
.000002	-.000020	0.000000						
A(7,0)	A(7,1)							
.000009	0.000000							
A(8,0)								
0.000000								

.096570=RMS WAVE DEFORMATION

Field point #1, $r_o - r_c = 1.0$

032377-347

WAVE ABERRATION (WAVELENGTH UNITS)

.19	-.12	-.32	-.42	-.47	-.47	-.43	-.39	-.36	-.33	-.32	-.34	-.38	-.43	-.49	-.57	-.63	-.70	-.74	-.76
.27	-.05	-.24	-.35	-.39	-.39	-.36	-.32	-.28	-.26	-.25	-.27	-.30	-.36	-.42	-.49	-.56	-.62	-.66	-.67
.35	.03	-.18	-.28	-.33	-.32	-.29	-.26	-.22	-.20	-.19	-.20	-.24	-.29	-.36	-.43	-.50	-.56	-.60	-.61
.40	.08	-.12	-.23	-.27	-.27	-.24	-.20	-.17	-.14	-.14	-.15	-.19	-.24	-.31	-.38	-.45	-.51	-.55	-.56
.46	.14	-.06	-.18	-.22	-.22	-.19	-.16	-.12	-.10	-.10	-.11	-.15	-.20	-.26	-.34	-.41	-.47	-.50	-.51
.51	.18	-.02	-.13	-.18	-.18	-.15	-.12	-.09	-.07	-.06	-.08	-.11	-.17	-.23	-.30	-.37	-.43	-.47	-.48
.55	.22	.01	-.10	-.15	-.15	-.13	-.09	-.06	-.04	-.04	-.05	-.09	-.14	-.21	-.28	-.35	-.41	-.45	-.45
.59	.26	.05	-.07	-.12	-.13	-.10	-.07	-.04	-.02	-.02	-.04	-.07	-.13	-.19	-.27	-.33	-.39	-.42	-.43
.62	.29	.07	-.05	-.10	-.11	-.09	-.06	-.03	-.01	-.01	-.03	-.06	-.12	-.19	-.26	-.32	-.38	-.42	-.42
.65	.31	.09	-.03	-.09	-.10	-.08	-.05	-.02	-.00	-.00	-.02	-.06	-.11	-.18	-.25	-.32	-.38	-.41	-.41
.67	.33	.11	-.02	-.08	-.09	-.07	-.04	-.02	-.00	-.00	-.02	-.06	-.12	-.19	-.26	-.33	-.38	-.42	-.41
.69	.34	.12	-.01	-.07	-.08	-.07	-.05	-.02	-.01	-.01	-.03	-.07	-.13	-.20	-.27	-.34	-.39	-.42	-.42
.71	.36	.13	-.00	-.07	-.08	-.07	-.05	-.03	-.02	-.02	-.04	-.09	-.14	-.21	-.28	-.35	-.41	-.44	-.44
.72	.37	.14	.00	-.07	-.09	-.08	-.06	-.04	-.03	-.03	-.06	-.10	-.16	-.23	-.30	-.37	-.43	-.46	-.46
.74	.38	.15	.00	-.07	-.09	-.09	-.07	-.05	-.05	-.05	-.08	-.12	-.18	-.25	-.33	-.40	-.45	-.48	-.48
.75	.39	.15	.00	-.07	-.10	-.10	-.08	-.07	-.06	-.07	-.10	-.15	-.21	-.28	-.35	-.42	-.48	-.51	-.50
.77	.40	.16	.00	-.08	-.11	-.11	-.10	-.09	-.09	-.10	-.13	-.17	-.23	-.31	-.38	-.45	-.51	-.54	-.54
.79	.41	.16	.00	-.08	-.12	-.12	-.12	-.11	-.11	-.12	-.15	-.20	-.27	-.34	-.41	-.49	-.54	-.57	-.56
.81	.43	.17	.00	-.09	-.13	-.14	-.13	-.13	-.13	-.15	-.18	-.23	-.30	-.37	-.45	-.52	-.58	-.61	-.60
.82	.44	.17	.01	-.09	-.13	-.15	-.15	-.15	-.15	-.17	-.21	-.26	-.33	-.40	-.49	-.56	-.62	-.65	-.64

ORIGINAL PAGE IS
OF POOR QUALITY

DESIGN NO.64325IX, JPL CORRELATOR, RCC, SHIFT LENS, DUMMY AZIMUTH TELESCOPE.

032377 347

FIELD POINT NO.1

.6328-MCR=REF.WVLTH

.6328-MCR=WVF.WVLTH

RE-NORMALIZED LEGENDRE COEFFICIENTS

A(0,0) 0.000000	A(0,1) 0.000000	A(0,2) .027644	A(0,3) -.099366	A(0,4) .086085	A(0,5) -.005494	A(0,6) -.002560	A(0,7) .001053	A(0,8) 0.000000
A(1,0) 0.000000	A(1,1) .046625	A(1,2) -.023654	A(1,3) .000271	A(1,4) -.000683	A(1,5) -.000865	A(1,6) .000016	A(1,7) 0.000000	
A(2,0) -.076844	A(2,1) -.012895	A(2,2) .003011	A(2,3) -.000430	A(2,4) -.000123	A(2,5) .000005	A(2,6) 0.000000		
A(3,0) -.015092	A(3,1) .000944	A(3,2) .000082	A(3,3) -.000064	A(3,4) -.000037	A(3,5) 0.000000			
A(4,0) -.000164	A(4,1) -.000001	A(4,2) -.000100	A(4,3) .000049	A(4,4) 0.000000				
A(5,0) .000022	A(5,1) -.000127	A(5,2) .000257	A(5,3) 0.000000					
A(6,0) -.000170	A(6,1) -.000114	A(6,2) 0.000000						
A(7,0) .000055	A(7,1) 0.000000							
A(8,0) 0.000000								

ORIGINAL PAGE IS
OF POOR QUALITY

.164309=RMS WAVE DEFORMATION

Field point #2, $r_o - r_c = -1.0$

ORIGINAL PAGE 133
OF POOR QUALITY

032377-347

FIELD POINT NO. 2

$$-1.0000000 = H(Y)$$
$$0.0000000=H(Z)$$
$$0.000000 = G(Y) \quad 1.000000 = E(Y)$$

• 985081=E(Z)

• 892189=HPR(Y)

• 010595=HPR(Z)

•012492=NA(Y) -•044727=NA(Z)

• 6328=REFERENCE FOCUS WAVELENGTH

•6328=RAY TRACING WAVELENGTH

400 RAYS THROUGH ENTRANCE PUPIL

400 RAYS THROUGH EXIT PUPIL

0 VIGNETTED RAYS

ORIGINAL PAGE IS
OF POOR QUALITY

WAVE ABERRATION (WAVELENGTH UNITS)

.12	-.05	-.14	-.19	-.19	-.18	-.16	-.13	-.13	-.13	-.15	-.18	-.22	-.27	-.30	-.31	-.27	-.16	.04	.37
.13	-.04	-.13	-.17	-.18	-.16	-.13	-.11	-.10	-.10	-.11	-.15	-.18	-.23	-.26	-.26	-.22	-.11	.09	.42
.12	-.04	-.13	-.17	-.16	-.15	-.11	-.09	-.07	-.07	-.08	-.11	-.15	-.19	-.22	-.23	-.18	-.07	.13	.46
.12	-.04	-.13	-.16	-.16	-.13	-.10	-.07	-.05	-.05	-.06	-.09	-.12	-.16	-.19	-.19	-.15	-.04	.17	.50
.11	-.05	-.13	-.16	-.15	-.13	-.09	-.06	-.04	-.03	-.04	-.07	-.10	-.14	-.16	-.16	-.12	-.01	.19	.53
.10	-.05	-.13	-.16	-.15	-.12	-.09	-.05	-.03	-.02	-.03	-.05	-.08	-.12	-.14	-.14	-.10	.02	.22	.56
.09	-.06	-.14	-.16	-.15	-.12	-.08	-.05	-.02	-.01	-.02	-.04	-.07	-.10	-.12	-.12	-.07	.04	.25	.58
.08	-.07	-.15	-.17	-.16	-.12	-.08	-.05	-.02	-.01	-.01	-.03	-.06	-.09	-.11	-.11	-.06	.05	.26	.60
.06	-.08	-.16	-.18	-.16	-.13	-.09	-.05	-.02	-.00	-.01	-.02	-.05	-.08	-.10	-.09	-.05	.07	.28	.61
.05	-.10	-.17	-.19	-.17	-.13	-.09	-.05	-.02	-.00	-.00	-.02	-.04	-.07	-.09	-.08	-.03	.08	.29	.62
.04	-.10	-.17	-.19	-.17	-.14	-.09	-.05	-.02	-.00	-.00	-.02	-.04	-.07	-.08	-.07	-.03	.09	.30	.63
.03	-.11	-.18	-.20	-.18	-.14	-.10	-.06	-.02	-.00	-.00	-.01	-.04	-.06	-.08	-.07	-.02	.10	.31	.64
.02	-.12	-.19	-.20	-.19	-.15	-.10	-.06	-.02	-.00	-.00	-.01	-.04	-.06	-.07	-.07	-.01	.11	.31	.65
.01	-.13	-.19	-.21	-.19	-.15	-.10	-.06	-.03	-.01	-.00	-.01	-.03	-.06	-.07	-.06	-.01	.11	.32	.65
.01	-.13	-.19	-.21	-.19	-.15	-.11	-.06	-.03	-.01	-.00	-.01	-.03	-.05	-.07	-.05	-.00	.12	.33	.66
.01	-.12	-.19	-.21	-.19	-.15	-.11	-.06	-.03	-.00	-.00	-.01	-.03	-.05	-.06	-.05	.00	.13	.34	.66
.01	-.12	-.19	-.21	-.19	-.15	-.10	-.06	-.02	-.00	.00	-.01	-.02	-.04	-.05	-.04	.01	.13	.34	.67
.03	-.11	-.18	-.20	-.18	-.14	-.10	-.05	-.02	.00	.01	.00	-.01	-.03	-.05	-.03	.02	.14	.35	.68
.04	-.10	-.17	-.19	-.17	-.13	-.09	-.04	-.01	.01	.02	.01	-.01	-.03	-.03	-.02	.03	.15	.36	.69
.06	-.08	-.15	-.16	-.15	-.12	-.07	-.03	.00	.02	.03	.02	.01	-.01	-.02	-.01	.04	.16	.37	.70

ORIGINAL PAGE IS
OF POOR QUALITY

FIELD POINT NO.2

.6328-MCR=REF.WVLTH

.6328-MCR=WVF.WVLTH

RE-NORMALIZED LEGENDRE COEFFICIENTS

A(0,0)	A(0,1)	A(0,2)	A(0,3)	A(0,4)	A(0,5)	A(0,6)	A(0,7)	A(0,8)
0.000000	0.000000	.095288	.053955	.099118	.003862	-.000863	-.000662	0.000000
A(1,0)	A(1,1)	A(1,2)	A(1,3)	A(1,4)	A(1,5)	A(1,6)	A(1,7)	
0.000000	-.039200	.002680	.001949	.001826	-.000380	-.000016	0.000000	
A(2,0)	A(2,1)	A(2,2)	A(2,3)	A(2,4)	A(2,5)	A(2,6)		
-.013198	-.013926	.003667	-.000318	-.000064	.000100	0.000000		
A(3,0)	A(3,1)	A(3,2)	A(3,3)	A(3,4)	A(3,5)			
-.013762	.000823	.000070	-.000017	-.000130	0.000000			
A(4,0)	A(4,1)	A(4,2)	A(4,3)	A(4,4)				
.000023	-.000049	-.000100	-.000043	0.000000				
A(5,0)	A(5,1)	A(5,2)	A(5,3)					
.000036	-.000151	.000018	0.000000					
A(6,0)	A(6,1)	A(6,2)						
.000119	.000058	0.000000						
A(7,0)	A(7,1)							
-.000073	0.000000							
A(8,0)								
0.000000								

ORIGINAL PAGE IS
OF POOR QUALITY

.154772=RMS WAVE DEFORMATION

PART III

EVALUATION OF PHASE G WITH THE RANGE CURVATURE CORRECTION
LENSES AFTER THE SHIFT LENS.

ORIGINAL PAGE
OF POOR QUALITY

Phase G

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2 -2 1 .332500=PM(1) 0.000000=SIN UM(1) 1.000000=HP(1) 0.000000=TAN UP(1)
2 -2 1 1.650000=PM(2) 0.000000=SIN UM(2) .025000=HP(2) 0.000000=TAN UP(2)

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ORIGINAL PAGE IS
OF POOR QUALITY

25 SPH	-24.5464	3.0303	1.00000	1.00000	1.00000	0.000	0.00	0.00	-49.9397	
26 SPH	-15.8548	1.3477	1.50671	1.51423	1.50592	508.612	ZKN7	0.00	0.00	46.3094
27 SPH	14.9126	5.5793	1.00000	1.00000	1.00000	0.000		0.00	0.00	44.9617
28 SPH	24.5830	1.3652	1.74969	1.77469	1.74729	755.276	SF4	0.00	0.00	39.3824
29 SPH	-31.1330	.0307	1.00000	1.00000	1.00000	0.000		0.00	0.00	38.0172
30 SPH	13.4336	1.8839	1.74969	1.77469	1.74729	755.276	SF4	0.00	0.00	37.9865
31 SPH	10.4469	13.8798	1.00000	1.00000	1.00000	0.000		0.00	0.00	36.1026
32 CYL	3.6547	.6500	1.63269	1.64909	1.63108	636.353	F6	0.00	0.00	22.2228
33 CYL	-6.4870	.2149	1.00000	1.00000	1.00000	0.000		0.00	0.00	21.5728
34 CYL	-5.2748	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	21.3579
35 CYL	INFINITE	9.5469	1.00000	1.00000	1.00000	0.000		0.00	0.00	21.0079
36 CYL	INFINITE	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	11.4610
37 CYL	2.2357	.6000	1.63269	1.64909	1.63108	636.353	F6	0.00	0.00	11.1110
38 CYL	-2.1304	.2026	1.00000	1.00000	1.00000	0.000		0.00	0.00	10.5110
39 CYL	2.5833	.6000	1.63269	1.64909	1.63108	636.353	F6	0.00	0.00	10.3084
40 CYL	-3.2796	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	9.7084
41 CYL	INFINITE	2.3284	1.00000	1.00000	1.00000	0.000		0.00	0.00	9.3584
42 CYL	-1.7898	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	7.0300
43 CYL	-5.6466	.0200	1.00000	1.00000	1.00000	0.000		0.00	0.00	6.6800
44 CYL	INFINITE	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	6.6600
45 CYL	2.4613	.0200	1.00000	1.00000	1.00000	0.000		0.00	0.00	6.3100
46 CYL	.9311	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	6.2900
47 CYL	1.2905	3.3600	1.00000	1.00000	1.00000	0.000		0.00	0.00	5.9400
48 RTN	.0761	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	2.5800
49 CYL	INFINITE	.4000	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	2.5800
50 CYL	-1.2000	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	2.1800
51 RTN	-.0761	.5000	1.00000	1.00000	1.00000	0.000		0.00	0.00	2.1800
52 CYL	1.2000	.4000	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	1.6800
53 CYL	INFINITE	1.2800	1.00000	1.00000	1.00000	0.000		0.00	0.00	1.2800
54 SPH	INFINITE	-.0283	1.00000	1.00000	1.00000	0.000		0.00	0.00	-.0000

TABLE OF CONSTANTS

1 4.069600E+05 3.906200E-01 -4.557300E+03 1.106000E+02 0.000000E+00

FIRST ADDED PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
-27.670022	999999.999996	-7380.102740	-3609.315838	7090.854430	3481.538592	1.240960
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
1.000000	999999.999996	41.609055	-20.425923	-40.121703	86.743518	-.964254
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-.964254	0.000000	132.012748	130.771787	-158.441809	.015874	-1.037071
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
0.000000	.000202	12.000000	159.682769	1.928508	1.240960	53.000000

FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

OBJECT DSTNCF	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
175.467238	999999.999996	203.183038	4.659074	-4.292188	.366886	1.308345
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
.025000	999999.999996	-53.171890	8.938286	10.744446	.087623	-.005052
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-.202070	0.000000	132.080132	130.771787	44.695451	-.307439	-4.948779
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
0.000000	6.411054	35.000000	-43.387106	0.000000	2.107819	47.000000

ORIGINAL PAGE IS
OF POOR QUALITY

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$$0.0000000 = H(Y)$$
$$0.0000000 = H(Z)$$
$$0.000000 = G(Y)$$
$$1.000000 = E(Y)$$
$$1.0000000 = E(Z)$$

- .023602 = HPR(Y)

$$0.000000=HPR(Z)$$

• 012471=NA(Y)

$$-0.048902 = NA(7)$$

•6328=REFERENCE FOCUS WAVELENGTH

*6328=RAY TRACING WAVELENGTH

400 RAYS THROUGH ENTRANCE PUPIL

400 RAYS THROUGH EXIT PUPIL

0 VIGNETTED RAYS

ORIGINAL PAGE IS
OF POOR QUALITY

WAVE ABERRATION (WAVELENGTH UNITS)

.04	-.13	-.23	-.28	-.28	-.27	-.24	-.21	-.19	-.17	-.17	-.19	-.21	-.24	-.27	-.28	-.28	-.23	-.13	.04
.04	-.12	-.22	-.25	-.26	-.24	-.20	-.17	-.15	-.13	-.13	-.15	-.17	-.20	-.24	-.26	-.25	-.22	-.12	.04
.03	-.12	-.20	-.24	-.23	-.21	-.17	-.14	-.11	-.10	-.10	-.11	-.14	-.17	-.21	-.23	-.24	-.20	-.12	.03
.03	-.11	-.20	-.22	-.22	-.19	-.15	-.11	-.08	-.07	-.07	-.08	-.11	-.15	-.19	-.22	-.22	-.20	-.11	.03
.02	-.12	-.19	-.21	-.20	-.17	-.13	-.09	-.06	-.05	-.05	-.06	-.09	-.13	-.17	-.20	-.21	-.19	-.12	.02
.02	-.12	-.19	-.21	-.19	-.16	-.12	-.08	-.05	-.03	-.03	-.05	-.08	-.12	-.16	-.19	-.21	-.19	-.12	.02
.00	-.12	-.19	-.20	-.19	-.15	-.11	-.07	-.03	-.02	-.02	-.03	-.07	-.11	-.15	-.19	-.20	-.19	-.12	.00
.00	-.13	-.19	-.20	-.19	-.15	-.10	-.06	-.03	-.01	-.01	-.03	-.06	-.10	-.15	-.19	-.20	-.19	-.13	.00
-.00	-.13	-.19	-.20	-.18	-.14	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.10	-.14	-.18	-.20	-.19	-.13	-.00
-.01	-.13	-.19	-.20	-.18	-.14	-.10	-.05	-.02	-.00	-.00	-.02	-.05	-.10	-.14	-.18	-.20	-.19	-.13	-.01
-.01	-.13	-.19	-.20	-.18	-.14	-.10	-.05	-.02	-.00	-.00	-.02	-.05	-.10	-.14	-.18	-.20	-.19	-.13	-.01
-.01	-.13	-.19	-.20	-.18	-.14	-.10	-.05	-.02	-.00	-.00	-.02	-.05	-.10	-.14	-.18	-.20	-.19	-.13	-.01
.00	-.13	-.19	-.20	-.18	-.14	-.10	-.06	-.02	-.01	-.01	-.02	-.06	-.10	-.14	-.18	-.20	-.19	-.13	.00
.01	-.11	-.18	-.19	-.18	-.14	-.10	-.06	-.02	-.01	-.01	-.02	-.06	-.10	-.14	-.18	-.19	-.18	-.11	.01
.03	-.10	-.17	-.19	-.17	-.14	-.10	-.06	-.03	-.01	-.01	-.03	-.06	-.10	-.14	-.17	-.19	-.17	-.10	.03
.06	-.08	-.15	-.18	-.17	-.13	-.09	-.06	-.02	-.01	-.01	-.02	-.06	-.09	-.13	-.17	-.18	-.15	-.08	.06
.09	-.06	-.13	-.16	-.15	-.13	-.09	-.05	-.02	-.01	-.01	-.02	-.05	-.09	-.13	-.15	-.16	-.13	-.06	.09
.13	-.02	-.10	-.14	-.14	-.11	-.08	-.04	-.02	-.00	-.00	-.02	-.04	-.08	-.11	-.14	-.14	-.10	-.02	.13
.18	.02	-.07	-.11	-.12	-.10	-.07	-.03	-.01	.01	.01	-.01	-.03	-.07	-.10	-.12	-.11	-.07	.02	.18
.23	.07	-.03	-.08	-.09	-.07	-.05	-.02	.01	.02	.02	.01	-.02	-.05	-.07	-.09	-.08	-.03	.07	.23

ORIGINAL PAGE IS
OF POOR QUALITY

FIELD POINT NO.0

.6328-MCR=REF.WVLTH

.6328-MCR=WVF.WVLTH

RE-NORMALIZED LEGENDRE COEFFICIENTS

A(0,0)	A(0,1)	A(0,2)	A(0,3)	A(0,4)	A(0,5)	A(0,6)	A(0,7)	A(0,8)
0.000000	0.000000	.010536	.000000	.074978	.000000	-.001372	.000000	0.000000
A(1,0)	A(1,1)	A(1,2)	A(1,3)	A(1,4)	A(1,5)	A(1,6)	A(1,7)	
0.000000	-.000000	.000193	-.000000	.000560	-.000000	.000013	0.000000	
A(2,0)	A(2,1)	A(2,2)	A(2,3)	A(2,4)	A(2,5)	A(2,6)		
.001505	.000000	.024315	.000000	.000298	.000000	0.000000		
A(3,0)	A(3,1)	A(3,2)	A(3,3)	A(3,4)	A(3,5)			
-.017047	.000000	-.000089	.000000	-.000020	0.000000			
A(4,0)	A(4,1)	A(4,2)	A(4,3)	A(4,4)				
.000157	-.000000	.000076	-.000000	0.000000				
A(5,0)	A(5,1)	A(5,2)	A(5,3)					
.000173	-.000000	.000156	0.000000					
A(6,0)	A(6,1)	A(6,2)						
-.000056	-.000000	0.000000						
A(7,0)	A(7,1)							
-.000001	0.000000							
A(8,0)								
0.000000								

.081358=RMS WAVE DEFORMATION

PART IV

PHASE G AND PHASE I, BOTH WITH DUMMY AZIMUTH TELESCOPE
TO SHOW NECESSARY AMOUNT OF REFOCUSING.

Phase G

DESIGN NO.64325GX, JPL CORRELATOR, RCC, SHIFT LENS, DUMMY AZIMUTH TELESCOPE.

032377-331

								25.4MM=UNIT OF LENGTH		
		RADIUS,ETC	AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	1ST.CA	2ND.CA	STATION
2	-2	1	.332500=PM(1)	0.000000=SIN UM(1)	1.000000=HP(1)	0.000000=TAN UP(1)				
2	-2	1	1.650000=PM(2)	0.000000=SIN UM(2)	0.000000=HP(2)	0.000000=TAN UP(2)				
			.63280	.48610	.65630					
			0.0000	1.00000	1.00000	1.00000		0.00	0.00	126.9525
1	RTN		0.0000	0.0000	1.00000	1.00000	0.000	0.00	0.00	126.9525
2	TRN		0.0000	0.0000	1.00000	1.00000	0.000	0.00	0.00	126.9525
3	RPH *****		.0000	0.0000	1.00000	1.00000	-0.000 XXXXXX	0.00	0.00	126.9525
4	TRN		0.0000	18.0000	1.00000	1.00000	0.000	0.00	0.00	126.9525
5	SPH	-10.4464	1.8839	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	108.9525
6	SPH	-13.4336	.0307	1.00000	1.00000	1.00000	0.000	0.00	0.00	107.0686
7	SPH	31.1330	1.3652	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	107.0379
8	SPH	-24.5830	5.5793	1.00000	1.00000	1.00000	0.000	0.00	0.00	105.6727
9	SPH	-14.9126	1.3477	1.50671	1.51423	1.50592	508.612 ZKN7	0.00	0.00	100.0934
10	SPH	15.8548	3.6306	1.00000	1.00000	1.00000	0.000	0.00	0.00	98.7457
11	SPH	24.5464	1.3652	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	95.1151
12	SPH	-34.5304	3.5303	1.00000	1.00000	1.00000	0.000	0.00	0.00	93.7499
13	SPH	13.1420	1.8553	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	90.2196
14	SPH	10.5330	16.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	88.3643
15	RTN	-.0587	-.1653	1.00000	1.00000	1.00000	0.000	0.00	0.00	72.3643
16	SPH	-6.6582	.3305	1.79883	1.82776	1.79609	805.254 SF6	0.00	0.00	72.5295
17	CYL	-6.6582	-.1653	1.00000	1.00000	1.00000	0.000	0.00	0.00	72.1990
18	RTN	.0587	1.2919	1.00000	1.00000	1.00000	0.000	0.00	0.00	72.3643
19	RTN	.0587	-.1630	1.00000	1.00000	1.00000	0.000	0.00	0.00	71.0724
20	CYL	-7.3958	.3260	1.79883	1.82776	1.79609	805.254 SF6	0.00	0.00	71.2354
21	SPH	-7.7230	-.1630	1.00000	1.00000	1.00000	0.000	0.00	0.00	70.9094
22	RTN	-.0587	1.2522	1.00000	1.00000	1.00000	0.000	0.00	0.00	71.0724
23	RTN	0.0000	0.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	69.8202

24 CYL	5.7668	.2500	1.79883	1.7676	1.74609	805.254	SF6	0.00	0.00	69.8202
25 SPH	35.1212	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	69.5702
26 RTN	0.0000	17.9790	1.00000	1.00000	1.00000	0.000		0.00	0.00	69.5702
27 SPH	-10.5330	1.8553	1.74969	1.77469	1.74729	755.276	SF4	0.00	0.00	51.5912
28 SPH	-13.1420	3.5303	1.00000	1.00000	1.00000	0.000		0.00	0.00	49.7359
29 SPH	34.5304	1.3652	1.74969	1.77469	1.74729	755.276	SF4	0.00	0.00	46.2056
30 SPH	-24.5464	3.6303	1.00000	1.00000	1.00000	0.000		0.00	0.00	44.8404
31 SPH	-15.8548	1.3477	1.50671	1.51423	1.50592	508.612	ZKN7	0.00	0.00	41.2101
32 SPH	14.9126	5.5793	1.00000	1.00000	1.00000	0.000		0.00	0.00	39.8624
33 SPH	24.5830	1.3652	1.74969	1.77469	1.74729	755.276	SF4	0.00	0.00	34.2831
34 SPH	-31.1330	.0307	1.00000	1.00000	1.00000	0.000		0.00	0.00	32.9179
35 SPH	13.4336	1.8839	1.74969	1.77469	1.74729	755.276	SF4	0.00	0.00	32.8872
36 SPH	10.4469	17.3761	1.00000	1.00000	1.00000	0.000		0.00	0.00	31.0033
37 CYL	4.7640	.6500	1.75759	1.77722	1.75566	.028	XXXXXX	0.00	0.00	13.6271
38 CYL	-4.4429	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	12.9771
39 CYL	-3.6353	0.0000	1.61868	1.63477	1.61711	.029	XXXXXX	0.00	0.00	12.9771
40 CYL	28.9670	8.3670	1.00000	1.00000	1.00000	0.000		0.00	0.00	12.9771
41 CYL	3.3555	.1750	1.79583	1.82462	1.79308	.040	XXXXXX	0.00	0.00	4.6101
42 CYL	-2.1443	4.4351	1.00000	1.00000	1.00000	0.000		0.00	0.00	4.4351
43 SPH	INFINITE	-.0287	1.00000	1.00000	1.00000	0.000		0.00	0.00	.0000

TABLE OF CONSTANTS

3 4.069600E+05 3.906200E-01 -4.557300E+03 1.106000E+02 0.000000E+00

FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
-27.670022	999999.999996	999999.999996	999999.999996	367233.541038	180404.353465	4.396651
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
1.000000	999999.999996	41.609055	-20.440294	-40.177190	4490.108864	-.965588
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-.965588	0.000000	126.914030	122.517379	-150.187400	.000307	-1.035639
PT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
0.000000	1.248490	22.000000	154.584052	1.931175	4.396651	42.000000

FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

OBJECT DSTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
175.467238	999999.999996	0.000000	0.000000	0.000000	999999.999996	4.463801

0.000000	99999.99999	33.171090	14.500000	11.373710	99999.99999	0.000000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
.214322	0.000000	126.981180	122.517379	52.949860	0.000000	4.665871
PT.STOP SIZE	APT.STOP DIST	FROM SHFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
0.000000	0.000000	0.000000	-48.486059	0.000000	5.779178	40.000000

ORIGINAL PAGE IS
OF POOR QUALITY

WAVE ABERRATION (WAVELENGTH UNITS)

-.00	-.16	-.24	-.28	-.27	-.23	-.19	-.14	-.11	-.09	-.09	-.11	-.14	-.19	-.23	-.27	-.28	-.24	-.16	-.00
.01	-.14	-.22	-.25	-.24	-.21	-.17	-.12	-.09	-.07	-.07	-.09	-.12	-.17	-.21	-.24	-.25	-.22	-.14	.01
.03	-.12	-.21	-.24	-.23	-.19	-.15	-.10	-.07	-.05	-.05	-.07	-.10	-.15	-.19	-.23	-.24	-.21	-.12	.03
.04	-.11	-.20	-.22	-.21	-.18	-.13	-.09	-.05	-.03	-.03	-.05	-.09	-.13	-.18	-.21	-.22	-.20	-.11	.04
.05	-.10	-.18	-.21	-.20	-.17	-.12	-.08	-.04	-.02	-.02	-.04	-.08	-.12	-.17	-.20	-.21	-.18	-.10	.05
.05	-.10	-.18	-.20	-.19	-.16	-.11	-.07	-.03	-.01	-.01	-.03	-.07	-.11	-.16	-.19	-.20	-.18	-.10	.05
.06	-.09	-.18	-.20	-.19	-.15	-.11	-.06	-.03	-.01	-.01	-.03	-.06	-.11	-.15	-.19	-.20	-.18	-.09	.06
.06	-.09	-.17	-.20	-.19	-.15	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.10	-.15	-.19	-.20	-.17	-.09	.06
.06	-.09	-.17	-.20	-.19	-.15	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.10	-.15	-.19	-.20	-.17	-.09	.06
.06	-.09	-.17	-.20	-.18	-.15	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.10	-.15	-.18	-.20	-.17	-.09	.06
.06	-.09	-.17	-.20	-.18	-.15	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.10	-.15	-.18	-.20	-.17	-.09	.06
.06	-.09	-.17	-.20	-.18	-.15	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.10	-.15	-.18	-.20	-.17	-.09	.06
.06	-.09	-.17	-.20	-.18	-.15	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.10	-.15	-.18	-.20	-.17	-.09	.06
.06	-.08	-.16	-.19	-.18	-.14	-.10	-.05	-.02	.00	.00	-.02	-.05	-.10	-.14	-.18	-.19	-.16	-.08	.06
.07	-.08	-.16	-.19	-.18	-.14	-.09	-.05	-.02	.00	.00	-.02	-.05	-.09	-.14	-.18	-.19	-.16	-.08	.07
.08	-.07	-.15	-.18	-.17	-.13	-.09	-.04	-.01	.01	.01	-.01	-.04	-.09	-.13	-.17	-.18	-.15	-.07	.08
.09	-.06	-.14	-.17	-.16	-.12	-.08	-.04	-.00	.02	.02	-.00	-.04	-.08	-.12	-.16	-.17	-.14	-.06	.09
.11	-.04	-.12	-.15	-.14	-.11	-.07	-.02	.01	.03	.03	.01	-.02	-.07	-.11	-.14	-.15	-.12	-.04	.11
.13	-.02	-.11	-.13	-.13	-.09	-.05	-.01	.03	.05	.05	.03	-.01	-.05	-.09	-.13	-.13	-.11	-.02	.13
.15	.00	-.08	-.11	-.10	-.07	-.03	.02	.05	.07	.07	.05	.02	-.03	-.07	-.10	-.11	-.08	.00	.15

DESIGN NO.64325GX, JPL CORRELATOR, RCC, SHIFT LENS, DUMMY AZIMUTH TELESCOPE.

032377 331

FIELD POINT NO.0

.6328-MCR=REF.WVLTH

.6328-MCR=WVF.WVLTH

RE-NORMALIZED LEGENDRE COEFFICIENTS

A(0,0)	A(0,1)	A(0,2)	A(0,3)	A(0,4)	A(0,5)	A(0,6)	A(0,7)	A(0,8)
0.000000	0.000000	.008410	.000000	.084005	.000000	-.002940	.000000	0.000000
A(1,0)	A(1,1)	A(1,2)	A(1,3)	A(1,4)	A(1,5)	A(1,6)	A(1,7)	
0.000000	.000000	.000144	.000000	.000521	.000000	-.000130	0.000000	
A(2,0)	A(2,1)	A(2,2)	A(2,3)	A(2,4)	A(2,5)	A(2,6)		
.000169	-.000000	.002934	-.000000	-.000104	-.000000	0.000000		
A(3,0)	A(3,1)	A(3,2)	A(3,3)	A(3,4)	A(3,5)			
-.013861	.000000	.000120	.000000	-.000046	0.000000			
A(4,0)	A(4,1)	A(4,2)	A(4,3)	A(4,4)				
.000059	.000000	-.000079	.000000	0.000000				
A(5,0)	A(5,1)	A(5,2)	A(5,3)					
.000110	.000000	.000135	0.000000					
A(6,0)	A(6,1)	A(6,2)						
-.000002	.000000	0.000000						
A(7,0)	A(7,1)							
.000025	0.000000							
A(8,0)								
0.000000								

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OF FOUR QUALITY

.085659=RMS WAVE DEFORMATION

Phase I

032377-335

								25.4MM=UNIT OF LENGTH		
RADIUS,ETC		AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME		1ST.CA	2ND.CA	STATION
		0.0000	1.00000	1.00000	1.00000			0.00	0.00	126.9525
1	RTN	-.0053	0.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	126.9525
2	TRN	-5.4900	0.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	126.9525
3	RPH *****	.0000	0.0000	1.00000	1.00000	1.00000	-.057 XXXXXX	0.00	0.00	126.9525
4	TRN	5.4900	18.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	126.9525
5	SPH	-10.4469	1.8839	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	108.9525
6	SPH	-13.4336	.0307	1.00000	1.00000	1.00000	0.000	0.00	0.00	107.0686
7	SPH	31.1330	1.3652	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	107.0379
8	SPH	-24.5830	5.5793	1.00000	1.00000	1.00000	0.000	0.00	0.00	105.6727
9	SPH	-14.9126	1.3477	1.50671	1.51423	1.50592	508.612 ZKN7	0.00	0.00	100.0934
0	SPH	15.8548	3.6306	1.00000	1.00000	1.00000	0.000	0.00	0.00	98.7457
1	SPH	24.5464	1.3652	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	95.1151
2	SPH	-34.5304	3.5303	1.00000	1.00000	1.00000	0.000	0.00	0.00	93.7499
3	SPH	13.1420	1.8553	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	90.2196
4	SPH	10.5330	16.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	88.3643
5	RTN	-.0587	-.1653	1.00000	1.00000	1.00000	0.000	0.00	0.00	72.3643
6	SPH	-6.6582	.3305	1.79883	1.82776	1.79609	805.254 SF6	0.00	0.00	72.5295
7	CYL	-6.6582	-.1653	1.00000	1.00000	1.00000	0.000	0.00	0.00	72.1990
8	RTN	.0587	1.2919	1.00000	1.00000	1.00000	0.000	0.00	0.00	72.3643
9	RTN	.0587	-.1630	1.00000	1.00000	1.00000	0.000	0.00	0.00	71.0724
0	CYL	-7.3958	.3260	1.79883	1.82776	1.79609	805.254 SF6	0.00	0.00	71.2354
1	SPH	-7.7230	-.1630	1.00000	1.00000	1.00000	0.000	0.00	0.00	70.9094
2	RTN	-.0587	1.2522	1.00000	1.00000	1.00000	0.000	0.00	0.00	71.0724
3	RTN	-.0228	0.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	69.8202

24 CYL	5.7858	.2500	1.79883	1.79883	1.79883	805.254 SF6	0.00	0.00	69.8202
25 SPH	35.1212	0.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	69.5702
26 RTN	.0228	17.9790	1.00000	1.00000	1.00000	0.000	0.00	0.00	69.5702
27 SPH	-10.5330	1.8553	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	51.5912
28 SRH	-13.1420	3.5303	1.00000	1.00000	1.00000	0.000	0.00	0.00	49.7359
29 SPH	34.5304	1.3652	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	46.2056
30 SPH	-24.5464	3.6303	1.00000	1.00000	1.00000	0.000	0.00	0.00	44.8404
31 SPH	-15.8548	1.3477	1.50671	1.51423	1.50592	508.612 ZKN7	0.00	0.00	41.2101
32 SPH	14.9126	5.5793	1.00000	1.00000	1.00000	0.000	0.00	0.00	39.8624
33 SPH	24.5830	1.3652	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	34.2831
34 SPH	-31.1330	.0307	1.00000	1.00000	1.00000	0.000	0.00	0.00	32.9179
35 SPH	13.4336	1.8839	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	32.8872
36 SPH	10.4469	17.3592	1.00000	1.00000	1.00000	0.000	0.00	0.00	31.0033
37 CYL	4.7640	.6500	1.75759	1.77722	1.75566	.028 XXXXXX	0.00	0.00	13.6441
38 CYL	-4.4429	0.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	12.9941
39 CYL	-3.6353	0.0000	1.61868	1.63477	1.61711	.029 XXXXXX	0.00	0.00	12.9941
40 CYL	28.9670	8.3670	1.00000	1.00000	1.00000	0.000	0.00	0.00	12.9941
41 CYL	3.3555	.1750	1.79583	1.82462	1.79308	.040 XXXXXX	0.00	0.00	4.6270
42 CYL	-2.1443	4.4520	1.00000	1.00000	1.00000	0.000	0.00	0.00	4.4520
43 SPH	INFINITE	-.0127	1.00000	1.00000	1.00000	0.000	0.00	0.00	.0000

ORIGINAL PAGE IS
OF POOR QUALITY

TABLE OF CONSTANTS

3 4.069600E+05 3.906200E-01 -4.557300E+03 1.106000E+02 6.563200E+03

FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
-27.670022	999999.999996	999999.999996	999999.999996	367233.557985	180404.370414	4.413600
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
1.000000	999999.999996	41.609055	-20.440294	-40.177190	4490.108864	-.965588
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-.965588	0.000000	126.914030	122.500430	-150.170452	.000307	-1.035639
APT.STOP SIZE	APT.STOP DIST	FROM SRFC.FNO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
0.000000	1.248490	22.000000	154.584052	1.931175	4.413600	42.000000

FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

OBJECT DSTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
175.467238	999999.999996	0.000000	0.000000	0.000000	999999.999996	4.464714
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT

0.000000	999999.999998	-55.171690	-14.500000	-11.593316	999999.999998	0.000000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATION
.214322	0.000000	126.965144	122.500430	52.966808	0.000000	4.665871
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
0.000000	0.000000	0.000000	-48.502094	0.000000	5.779494	40.000000

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OF POOR QUALITY

032377-335

$$0.0000000 = H(Y)$$
$$0.0000000 = H(Z)$$
$$0.000000 = G(Y)$$
$$1.0000000 = E(Y)$$

1.0000000=E(7)

$$-.056984 = \text{HPR}(Y)$$

• 000046=HPR(Z)

012503=NA(Y)

043077=NA(7)

•6328=REFERENCE FOCUS WAVELENGTH

•6328=RAY TRACING WAVELENGTH

400 RAYS THROUGH ENTRANCE PUPIL

400 RAYS THROUGH EXIT PUPIL

0 VIGNETTED RAYS

A large square composed of a 20x20 grid of asterisks. The asterisks are arranged in a regular, repeating pattern across the entire grid, creating a textured, dotted appearance. The grid is perfectly square, with 20 rows and 20 columns of characters.

ORIGINAL PAGE IS
OF POOR QUALITY

WAVE ABERRATION (WAVELENGTH UNITS)

.16	-.02	-.12	-.17	-.18	-.16	-.12	-.09	-.06	-.04	-.04	-.06	-.09	-.12	-.16	-.18	-.17	-.12	-.02	.16
.16	-.02	-.12	-.16	-.17	-.15	-.11	-.07	-.04	-.03	-.03	-.04	-.07	-.11	-.15	-.17	-.16	-.12	-.02	.16
.16	-.01	-.12	-.16	-.16	-.14	-.10	-.06	-.03	-.02	-.02	-.03	-.06	-.10	-.14	-.16	-.16	-.12	-.01	.16
.16	-.01	-.12	-.16	-.16	-.14	-.10	-.06	-.03	-.01	-.01	-.03	-.06	-.10	-.14	-.16	-.16	-.12	-.01	.16
.15	-.02	-.12	-.16	-.16	-.13	-.09	-.05	-.02	-.00	-.00	-.02	-.05	-.09	-.13	-.16	-.16	-.12	-.02	.15
.15	-.02	-.12	-.16	-.16	-.13	-.09	-.05	-.02	-.00	-.00	-.02	-.05	-.09	-.13	-.16	-.16	-.12	-.02	.15
.15	-.02	-.12	-.16	-.16	-.13	-.09	-.05	-.02	-.00	-.00	-.02	-.05	-.09	-.13	-.16	-.16	-.12	-.02	.15
.14	-.03	-.12	-.16	-.16	-.14	-.09	-.05	-.02	-.00	-.00	-.02	-.05	-.09	-.14	-.16	-.16	-.12	-.03	.14
.14	-.03	-.12	-.17	-.16	-.14	-.10	-.05	-.02	-.00	-.00	-.02	-.05	-.10	-.14	-.16	-.17	-.12	-.03	.14
.14	-.03	-.12	-.16	-.16	-.14	-.10	-.05	-.02	-.00	-.00	-.02	-.05	-.10	-.14	-.16	-.16	-.12	-.03	.14
.14	-.03	-.12	-.16	-.16	-.14	-.10	-.05	-.02	-.00	-.00	-.02	-.05	-.10	-.14	-.16	-.16	-.12	-.03	.14
.14	-.02	-.12	-.16	-.16	-.13	-.09	-.05	-.02	-.00	-.00	-.02	-.05	-.09	-.13	-.16	-.16	-.12	-.02	.14
.15	-.01	-.11	-.15	-.15	-.13	-.09	-.05	-.02	.00	.00	-.02	-.05	-.09	-.13	-.15	-.15	-.11	-.01	.15
.17	.00	-.10	-.14	-.14	-.12	-.08	-.04	-.01	.01	.01	-.01	-.04	-.08	-.12	-.14	-.14	-.10	.00	.17
.19	.01	-.08	-.13	-.13	-.11	-.07	-.03	-.00	.01	.01	-.00	-.03	-.07	-.11	-.13	-.13	-.08	.01	.19
.21	.04	-.06	-.11	-.11	-.09	-.05	-.02	.01	.03	.03	.01	-.02	-.05	-.09	-.11	-.11	-.06	.04	.21
.24	.07	-.04	-.08	-.09	-.07	-.03	-.00	.03	.04	.04	.03	-.00	-.03	-.07	-.09	-.08	-.04	.07	.24
.27	.10	-.00	-.05	-.06	-.04	-.01	.02	.05	.06	.06	.05	.02	-.01	-.04	-.06	-.05	-.00	.10	.27
.32	.15	.04	-.02	-.03	-.01	.02	.05	.08	.09	.09	.08	.05	.02	-.01	-.03	-.02	.04	.15	.32
.37	.19	.08	.03	.02	.03	.06	.09	.11	.12	.12	.11	.09	.06	.03	.02	.03	.08	.19	.37

DESIGN NO.64325IX, JPL CORRELATOR, RCC, SHIFT LENS, DUMMY AZIMUTH TELESCOPE.

032377 335

FIELD POINT NO.0

.6328-MCR=REF.WVLTH

.6328-MCR=WVF.WVLTH

RE-NORMALIZED LEGENDRE COEFFICIENTS

A(0,0)	A(0,1)	A(0,2)	A(0,3)	A(0,4)	A(0,5)	A(0,6)	A(0,7)	A(0,8)
0.000000	0.000000	.042253	.000000	.084630	.000000	-.002892	.000000	0.000000
A(1,0)	A(1,1)	A(1,2)	A(1,3)	A(1,4)	A(1,5)	A(1,6)	A(1,7)	
0.000000	.000000	-.004634	.000000	.001677	.000000	-.000173	0.000000	
A(2,0)	A(2,1)	A(2,2)	A(2,3)	A(2,4)	A(2,5)	A(2,6)		
.026290	-.000000	.008835	-.000000	-.001539	-.000000	0.000000		
A(3,0)	A(3,1)	A(3,2)	A(3,3)	A(3,4)	A(3,5)			
-.014987	-.000000	-.000414	-.000000	-.000017	0.000000			
A(4,0)	A(4,1)	A(4,2)	A(4,3)	A(4,4)				
.000087	-.000000	-.000027	-.000000	0.000000				
A(5,0)	A(5,1)	A(5,2)	A(5,3)					
.000004	-.000000	.000121	0.000000					
A(6,0)	A(6,1)	A(6,2)						
.000018	-.000000	0.000000						
A(7,0)	A(7,1)							
.000089	0.000000							
A(8,0)								
0.000000								

.099883=RMS WAVE DEFORMATION

PART V

DISTRIBUTION OF INTENSITY IN THE IMAGE OF A POINT (POINT
SPREAD FUNCTION) OBTAINED BY FOURIER TRANSFORMATION OF
THE PUPIL FUNCTION.

Aberration-free system, free aperture.

\$OPTIONS 11,12,13,14,22,

\$TD

DESIGN NO.XXXXXX: ABERRATION-FREE SYSTEM.

112377- 0

2	2	1	.124378=PM(1)	-.012438=SIN UM(1)	0.000000=HP(1)	1.000000=TAN UP(1)				
2	2	1	.423729=PM(2)	-.042373=SIN UM(2)	0.000000=HP(2)	1.000000=TAN UP(2)				
				.63280	.48613	.65627	25.4MM=UNIT OF	LENGTH		
			RADIUS,ETC	AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	1ST.CA	2ND.CA
				0.0000	1.00000	1.00000	1.00000		1.00	0.00
									10.0000	STATION
1	SPH		INFINITE	10.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00
2	SPH		INFINITE	0.0000	1.00000	1.00000	1.00000	0.000	0.00	0.0000

FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DSTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
10.000000	0.000000	0.000000	999999.999996	0.000000	0.000000	10.000000
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
10.000000	.248756	-40.200000	999999.999996	-40.200000	.248756	10.000000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	45.000000	10.000000	0.000000	10.000000	45.000000	1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
.248756	0.000000	1.000000	0.000000	20.000000	10.000000	1.000000

FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

OBJECT DSTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
10.000000	0.000000	0.000000	999999.999996	0.000000	0.000000	10.000000
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
10.000000	.847458	-11.800000	999999.999996	-11.800000	.847458	10.000000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
1.000000	45.000000	10.000000	0.000000	10.000000	45.000000	1.000000
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
.847458	0.000000	1.000000	0.000000	20.000000	10.000000	1.000000

ORIGINAL PAGE IS
OF POOR QUALITY

FIELD POINT NO. 0

0.0000000=H(Y)

$$0.0000000 = H(Z)$$
$$0.000000 = G(Y)$$

1.0000000E(Y)

112377-
1.0000000E(7)

112377- 0

0.0000000=HPR(Y)

0.0000000=HPR(Z)

1.0000000E(Y)
0.012438=NA(Y)

1.0000000=E(2)
042373=NA(7)

•6328=REFERENCE FOCUS WAVELENGTH

.6328=RAY TRACING WAVELENGTH

400 RAYS THROUGH ENTRANCE PUPIL

400 RAYS THROUGH EXIT PUPIL

0 VIGNETTED RAYS

ORIGINAL PAGE IS
OF POOR
QUALITY

WAVE ABERRATION (WAVELENGTH UNITS)

[illegible]

SQUARED-COSINE WEIGHTED APERTURE

FILTER WEIGHTS (AMPLITUDE RATIO)

.21	.22	.25	.28	.31	.35	.39	.42	.44	.46	.46	.44	.42	.39	.35	.31	.28	.25	.22	.21
.22	.23	.26	.29	.33	.37	.41	.45	.47	.48	.48	.47	.45	.41	.37	.33	.29	.26	.23	.22
.25	.26	.29	.32	.37	.41	.46	.49	.52	.53	.53	.52	.49	.46	.41	.37	.32	.29	.26	.25
.28	.29	.32	.36	.41	.46	.51	.56	.59	.60	.60	.59	.56	.51	.46	.41	.36	.32	.29	.28
.31	.33	.37	.41	.47	.53	.58	.63	.66	.68	.68	.66	.63	.58	.53	.47	.41	.37	.33	.31
.35	.37	.41	.46	.53	.59	.66	.71	.75	.77	.77	.75	.71	.66	.59	.53	.46	.41	.37	.35
.39	.41	.46	.51	.58	.66	.72	.78	.83	.85	.85	.83	.78	.72	.66	.58	.51	.46	.41	.39
.42	.45	.49	.56	.63	.71	.78	.85	.89	.92	.92	.89	.85	.78	.71	.63	.56	.49	.45	.42
.44	.47	.52	.59	.66	.75	.83	.89	.94	.97	.97	.94	.89	.83	.75	.66	.59	.52	.47	.44
.46	.48	.53	.60	.68	.77	.85	.92	.97	.99	.99	.97	.92	.85	.77	.68	.60	.53	.48	.46
.46	.48	.53	.60	.68	.77	.85	.92	.97	.99	.99	.97	.92	.85	.77	.68	.60	.53	.48	.46
.44	.47	.52	.59	.66	.75	.83	.89	.94	.97	.97	.94	.89	.83	.75	.66	.59	.52	.47	.44
.42	.45	.49	.56	.63	.71	.78	.85	.89	.92	.92	.89	.85	.78	.71	.63	.56	.49	.45	.42
.39	.41	.46	.51	.58	.66	.72	.78	.83	.85	.85	.83	.78	.72	.66	.58	.51	.46	.41	.39
.35	.37	.41	.46	.53	.59	.66	.71	.75	.77	.77	.75	.71	.66	.59	.53	.46	.41	.37	.35
.31	.33	.37	.41	.47	.53	.58	.63	.66	.68	.68	.66	.63	.58	.53	.47	.41	.37	.33	.31
.28	.29	.32	.36	.41	.46	.51	.56	.59	.60	.60	.59	.56	.51	.46	.41	.36	.32	.29	.28
.25	.26	.29	.32	.37	.41	.46	.49	.52	.53	.53	.52	.49	.46	.41	.37	.32	.29	.26	.25
.22	.23	.26	.29	.33	.37	.41	.45	.47	.48	.48	.47	.45	.41	.37	.33	.29	.26	.23	.22
.21	.22	.25	.28	.31	.35	.39	.42	.44	.46	.46	.44	.42	.39	.35	.31	.28	.25	.22	.21

ORIGINAL PAGE IS
OF POOR QUALITY

IRRADIANCE ON THE FOCAL PLANE, 1000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= 3.111-MICRONS

VERTICAL SCALE 1-INCH= 10.598-MICRONS

FREE APERTURE

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IRRADIANCE ON THE FOCAL PLANE, 10000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= 3.111-MICRONS

VERTICAL SCALE 1-INCH= 10.598-MICRONS

FREE APERTURE

ORIGINAL PAGE IS
OF POOR QUALITY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120
121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160
161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200
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641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680
681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720
721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760
761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800
801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840
841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880
881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920
921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960
961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

IRRADIANCE ON THE FOCAL PLANE, 100000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= 3.111-MICRONS

VERTICAL SCALE 1-INCH= 10.598-MICRONS

FREE APERTURE

ORIGINAL OF

IRRADIANCE ON THE FOCAL PLANE,

0=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= 3.111-MICRONS

VERTICAL SCALE 1-INCH= 10.598-MICRONS

FREE APERTURE

Aberration-free system, \cos^2 weighted aperture.

IRRADIANCE ON THE FOCAL PLANE, 1000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= 3.111-MICRONS

VERTICAL SCALE 1-INCH= 10.598-MICRONS

.207FILTER TRANSMITTANCE AT EDGE OF APERTURE

3

IRRADIANCE ON THE FOCAL PLANE, 10000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= 3.111-MICRONS

VERTICAL SCALE 1-INCH= 10.598-MICRONS

.207FILTER TRANSMITTANCE AT EDGE OF APERTURE

ORIGINAL
OF POOR

IRRADIANCE ON THE FOCAL PLANE, 100000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= 3.111-MICRONS

VERTICAL SCALE 1-INCH= 10.598-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

ORIGINAL PAGE IS
OF POOR QUALITY

IRRADIANCE ON THE FOCAL PLANE,

0=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= 3.111-MICRONS

VERTICAL SCALE 1-INCH= 10.598-MICRONS

.207FILTER TRANSMITTANCE AT EDGE OF APERTURE

Phase G

DESIGN NO.64325G, JPL CORRELATOR, RANGE CURVATURE CORRECTOR, SHIFT AND AUXILIARY LENSES 103177- 0

							25.4MM=UNIT OF LENGTH		
		RADIUS,ETC	AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	1ST.CA 2ND.CA	STATION
2	-2 1	.332500=PM(1)	0.000000	=SIN UM(1)	1.000000	=HP(1)	0.000000	=TAN UP(1)	
2	-2 1	1.650000=PM(2)	0.000000	=SIN UM(2)	.025000	=HP(2)	0.000000	=TAN UP(2)	
			.63280	.48610	.65630				
			0.0000	1.00000	1.00000	1.00000		0.00 0.00	132.0518
1	RPH *****	.0000	18.0000	1.00000	1.00000	1.00000	0.000	0.00 0.00	132.0518
2	SPH	-10.4469	1.8839	1.74969	1.77469	1.74729	755.276 SF4	0.00 0.00	114.0518
3	SPH	-13.4336	.0307	1.00000	1.00000	1.00000	0.000	0.00 0.00	112.1679
4	SPH	31.1330	1.3652	1.74969	1.77469	1.74729	755.276 SF4	0.00 0.00	112.1372
5	SPH	-24.5830	5.5793	1.00000	1.00000	1.00000	0.000	0.00 0.00	110.7720
6	SPH	-14.9126	1.3477	1.50671	1.51423	1.50592	508.612 ZKN7	0.00 0.00	105.1927
7	SPH	15.8548	3.6306	1.00000	1.00000	1.00000	0.000	0.00 0.00	103.8450
8	SPH	24.5464	1.3652	1.74969	1.77469	1.74729	755.276 SF4	0.00 0.00	100.2144
9	SPH	-34.5304	3.5303	1.00000	1.00000	1.00000	0.000	0.00 0.00	98.8492
10	SPH	13.1420	1.8553	1.74969	1.77469	1.74729	755.276 SF4	0.00 0.00	95.3189
11	SPH	10.5330	16.0000	1.00000	1.00000	1.00000	0.000	0.00 0.00	93.4636
12	RTN	-.0587	-.1653	1.00000	1.00000	1.00000	0.000	0.00 0.00	77.4636
13	SPH	-6.6582	.3305	1.79883	1.82776	1.79609	805.254 SF6	0.00 0.00	77.6288
14	CYL	-6.6582	-.1653	1.00000	1.00000	1.00000	0.000	0.00 0.00	77.2983
15	RTN	.0587	1.2919	1.00000	1.00000	1.00000	0.000	0.00 0.00	77.4636
16	RTN	.0587	-.1630	1.00000	1.00000	1.00000	0.000	0.00 0.00	76.1717
17	CYL	-7.3958	.3260	1.79883	1.82776	1.79609	805.254 SF6	0.00 0.00	76.3347
18	SPH	-7.7230	-.1630	1.00000	1.00000	1.00000	0.000	0.00 0.00	76.0087
19	RTN	-.0587	1.2522	1.00000	1.00000	1.00000	0.000	0.00 0.00	76.1717
20	CYL	5.6253	.2500	1.79883	1.82776	1.79609	805.254 SF6	0.00 0.00	74.9195
21	SPH	30.3365	17.9790	1.00000	1.00000	1.00000	0.000	0.00 0.00	74.6695
22	SPH	-10.5330	1.8553	1.74969	1.77469	1.74729	755.276 SF4	0.00 0.00	56.6905
23	SPH	-13.1420	3.5303	1.00000	1.00000	1.00000	0.000	0.00 0.00	54.8352
24	SPH	34.5304	1.3652	1.74969	1.77469	1.74729	755.276 SF4	0.00 0.00	51.3049
25	SPH	-24.5464	3.6303	1.00000	1.00000	1.00000	0.000	0.00 0.00	49.9397

26	SPH	-15.8544	1.3477	1.50671	1.51	1.50592	508.612	ZKN7	0.00	0.00	46.3094
27	SPH	14.9126	5.5793	1.00000	1.00000	1.00000	0.000		0.00	0.00	44.9617
28	SPH	24.5830	1.3652	1.74969	1.77469	1.74729	755.276	SF4	0.00	0.00	39.3824
29	SPH	-31.1330	.0307	1.00000	1.00000	1.00000	0.000		0.00	0.00	38.0172
30	SPH	13.4336	1.8839	1.74969	1.7469	1.74729	755.276	SF4	0.00	0.00	37.9865
31	SPH	10.4469	13.8798	1.00000	1.00000	1.00000	0.000		0.00	0.00	36.1026
32	CYL	3.6547	.6500	1.63269	1.64909	1.63108	636.353	F6	0.00	0.00	22.2228
33	CYL	-6.4870	.2149	1.00000	1.00000	1.00000	0.000		0.00	0.00	21.5728
34	CYL	-5.2748	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	21.3579
35	CYL	INFINITE	9.5469	1.00000	1.00000	1.00000	0.000		0.00	0.00	21.0079
36	CYL	INFINITE	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	11.4610
37	CYL	2.2357	.6000	1.63269	1.64909	1.63108	636.353	F6	0.00	0.00	11.1110
38	CYL	-2.1304	.2026	1.00000	1.00000	1.00000	0.000		0.00	0.00	10.5110
39	CYL	2.5833	.6000	1.63269	1.64909	1.63108	636.353	F6	0.00	0.00	10.3084
40	CYL	-3.2796	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	9.7084
41	CYL	INFINITE	2.3284	1.00000	1.00000	1.00000	0.000		0.00	0.00	9.3584
42	CYL	-1.7898	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	7.0300
43	CYL	-5.6466	.0200	1.00000	1.00000	1.00000	0.000		0.00	0.00	6.6800
44	CYL	INFINITE	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	6.6600
45	CYL	2.4613	.0200	1.00000	1.00000	1.00000	0.000		0.00	0.00	6.3100
46	CYL	.9311	.3500	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	6.2900
47	CYL	1.2905	3.3600	1.00000	1.00000	1.00000	0.000		0.00	0.00	5.9400
48	RTN	.0761	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	2.5800
49	CYL	INFINITE	.4000	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	2.5800
50	CYL	-1.2000	0.0000	1.00000	1.00000	1.00000	0.000		0.00	0.00	2.1800
51	RTN	.0761	.5000	1.00000	1.00000	1.00000	0.000		0.00	0.00	2.1800
52	CYL	1.2000	.4000	1.79883	1.82776	1.79609	805.254	SF6	0.00	0.00	1.6800
53	CYL	INFINITE	1.2800	1.00000	1.00000	1.00000	0.000		0.00	0.00	1.2800
54	SPH	INFINITE	-.0305	1.00000	1.00000	1.00000	0.000		0.00	0.00	-.0000

ORIGINAL DATA IS OFF BEHIND PARALLEL

TABLE OF CONSTANTS

1 4.069600E+05 3.906200E-01 -4.557300E+03 1.106000E+02 0.000000E+00

FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DISTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
-27.670022	999999.999996	999999.999996	999999.999996	372040.205900	182809.719947	1.210148
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
1.000000	999999.999996	41.609055	-20.445409	-40.196955	4547.819820	-.966063
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-.966063	0.000000	131.981909	130.771761	-158.441783	.000303	-1.035130
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.S' FCE.NO
0.000000	1.248489	19.000000	159.651930	1.932125	1.210148	53.000000

FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

OBJECT DISTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
175.467238	999999.999996	198.391415	4.166255	-3.781136	.385119	1.310471
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
.025000	999999.999996	-53.171890	9.663495	11.809819	.078354	-.005553
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-.222106	0.000000	132.082232	130.771761	44.695477	-.343805	-4.502346
APT.STOP SIZE	APT.STOP DIST	FROM SRFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM.SRFCE.NO
0.000000	6.479563	35.000000	-43.385006	0.000000	2.109813	47.000000

ORIGINAL PAGE 15
OF FOUR QUALITY

Field point #0, $r_o - r_c = 0$

Free aperture

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DESIGN NO.64325G, JPL CORRELATOR, RANGE CURVATURE CORRECTOR, SHIFT AND AUXILIARY LENSES      103177- 0
FIELD POINT NO. 0      0.000000=H(Y)      0.000000=H(Z)      0.000000=G(Y)      1.000000=E(Y)      1.000000=E(Z)
      -.022514=HPR(Y)      0.000000=HPR(Z)      .012444=NA(Y)      -.044719=NA(Z)
      .6328=REFERENCE FOCUS WAVELENGTH      .6328=RAY TRACING WAVELENGTH
400 RAYS THROUGH ENTRANCE PUPIL      400 RAYS THROUGH EXIT PUPIL      0 VIGNETTED RAYS

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WAVE ABERRATION (WAVELENGTH UNITS)

-.00	-.12	-.18	-.19	-.17	-.14	-.10	-.05	-.03	-.01	-.01	-.03	-.05	-.10	-.14	-.17	-.19	-.18	-.12	-.00
-.02	-.13	-.18	-.19	-.17	-.13	-.09	-.05	-.02	-.00	-.00	-.02	-.05	-.09	-.13	-.17	-.19	-.18	-.13	-.02
-.03	-.14	-.19	-.19	-.17	-.13	-.09	-.04	-.01	.00	.00	-.01	-.04	-.09	-.13	-.17	-.19	-.19	-.14	-.03
-.03	-.14	-.19	-.20	-.17	-.13	-.08	-.04	-.01	.01	.01	-.01	-.04	-.08	-.13	-.17	-.20	-.19	-.14	-.03
-.04	-.15	-.20	-.20	-.18	-.13	-.09	-.04	-.01	.01	.01	-.01	-.04	-.09	-.13	-.18	-.20	-.20	-.15	-.04
-.05	-.16	-.20	-.20	-.18	-.14	-.09	-.04	-.01	.01	.01	-.01	-.04	-.09	-.14	-.18	-.20	-.20	-.16	-.05
-.06	-.17	-.21	-.21	-.18	-.14	-.09	-.05	-.01	.00	.00	-.01	-.05	-.09	-.14	-.18	-.21	-.21	-.17	-.06
-.06	-.17	-.21	-.21	-.18	-.14	-.09	-.05	-.02	.00	.00	-.02	-.05	-.09	-.14	-.18	-.21	-.21	-.17	-.06
-.07	-.17	-.21	-.21	-.19	-.14	-.09	-.05	-.02	-.00	-.00	-.02	-.05	-.09	-.14	-.19	-.21	-.21	-.17	-.07
-.06	-.17	-.21	-.22	-.19	-.14	-.10	-.05	-.02	-.00	-.00	-.02	-.05	-.10	-.14	-.19	-.22	-.21	-.17	-.06
-.06	-.16	-.21	-.21	-.19	-.14	-.09	-.05	-.02	-.00	-.00	-.02	-.05	-.09	-.14	-.19	-.21	-.21	-.16	-.06
-.05	-.16	-.21	-.21	-.18	-.14	-.09	-.05	-.02	-.00	-.00	-.02	-.05	-.09	-.14	-.18	-.21	-.21	-.16	-.05
-.03	-.15	-.19	-.20	-.17	-.13	-.09	-.04	-.01	.00	.00	-.01	-.04	-.09	-.13	-.17	-.20	-.19	-.15	-.03
-.02	-.12	-.18	-.18	-.16	-.12	-.08	-.04	-.00	.01	.01	-.00	-.04	-.08	-.12	-.16	-.18	-.18	-.12	-.02
.01	-.10	-.15	-.16	-.14	-.11	-.06	-.02	.01	.02	.02	.01	-.02	-.06	-.11	-.14	-.16	-.15	-.10	.01
.05	-.07	-.13	-.14	-.12	-.09	-.05	-.01	.02	.04	.04	.02	-.01	-.05	-.09	-.12	-.14	-.13	-.07	.05
.09	-.04	-.10	-.11	-.10	-.06	-.02	.01	.04	.06	.06	.04	.01	-.02	-.06	-.10	-.11	-.10	-.04	.09
.13	.01	-.06	-.08	-.06	-.03	.00	.04	.07	.08	.08	.07	.04	.00	-.03	-.06	-.08	-.06	.01	.13
.19	.06	-.01	-.03	-.02	.00	.04	.07	.10	.11	.11	.10	.07	.04	.00	-.02	-.03	-.01	.06	.19
.25	.11	.04	.01	.02	.04	.08	.11	.14	.15	.15	.14	.11	.08	.04	.02	.01	.04	.11	.25

ORIGINAL PAGE IS
OF POOR QUALITY

SQUARED-COSINE WEIGHTED APERTURE

FILTER WEIGHTS (AMPLITUDE RATIO)

.21	.22	.25	.28	.31	.35	.39	.42	.44	.46	.46	.44	.42	.39	.35	.31	.28	.25	.22	.21
.22	.23	.26	.29	.33	.37	.41	.45	.47	.48	.48	.47	.45	.41	.37	.33	.29	.26	.23	.22
.25	.26	.29	.32	.37	.41	.46	.49	.52	.53	.53	.52	.49	.46	.41	.37	.32	.29	.26	.25
.28	.29	.32	.36	.41	.46	.51	.56	.59	.60	.60	.59	.56	.51	.46	.41	.36	.32	.29	.28
.31	.33	.37	.41	.47	.53	.58	.63	.66	.68	.68	.66	.63	.58	.53	.47	.41	.37	.33	.31
.35	.37	.41	.46	.53	.59	.66	.71	.75	.77	.77	.75	.71	.66	.59	.53	.46	.41	.37	.35
.39	.41	.46	.51	.58	.66	.72	.78	.83	.85	.85	.83	.78	.72	.66	.58	.51	.46	.41	.39
.42	.45	.49	.56	.63	.71	.78	.85	.89	.92	.92	.89	.85	.78	.71	.63	.56	.49	.45	.42
.44	.47	.52	.59	.66	.75	.83	.89	.94	.97	.97	.94	.89	.83	.75	.66	.59	.52	.47	.44
.46	.48	.53	.60	.68	.77	.85	.92	.97	.99	.99	.97	.92	.85	.77	.68	.60	.53	.48	.46
.46	.48	.53	.60	.68	.77	.85	.92	.97	.99	.99	.97	.92	.85	.77	.68	.60	.53	.48	.46
.44	.47	.52	.59	.66	.75	.83	.89	.94	.97	.97	.94	.89	.83	.75	.66	.59	.52	.47	.44
.42	.45	.49	.56	.63	.71	.78	.85	.89	.92	.92	.89	.85	.78	.71	.63	.56	.49	.45	.42
.39	.41	.46	.51	.58	.66	.72	.78	.83	.85	.85	.83	.78	.72	.66	.58	.51	.46	.41	.39
.35	.37	.41	.46	.53	.59	.66	.71	.75	.77	.77	.75	.71	.66	.59	.53	.46	.41	.37	.35
.31	.33	.37	.41	.47	.53	.58	.63	.66	.68	.68	.66	.63	.58	.53	.47	.41	.37	.33	.31
.28	.29	.32	.36	.41	.46	.51	.56	.59	.60	.60	.59	.56	.51	.46	.41	.36	.32	.29	.28
.25	.26	.29	.32	.37	.41	.46	.49	.52	.53	.53	.52	.49	.46	.41	.37	.32	.29	.26	.25
.22	.23	.26	.29	.33	.37	.41	.45	.47	.48	.48	.47	.45	.41	.37	.33	.29	.26	.23	.22
.21	.22	.25	.28	.31	.35	.39	.42	.44	.46	.46	.44	.42	.39	.35	.31	.28	.25	.22	.21

IRRADIANCE ON THE FOCAL PLANE, 1000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.948-MICRONS

VERTICAL SCALE 1-INCH= 10.593-MICRONS

FREE APERTURE

ORIGINAL PAGE IS
OF POOR QUALITY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

IRRADIANCE ON THE FOCAL PLANE, 10000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.948-MICRONS

VERTICAL SCALE 1-INCH= 10.593-MICRONS

FREE APERTURE

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

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IRRADIANCE ON THE FOCAL PLANE, 100000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.948-MICRONS

VERTICAL SCALE 1-INCH= 10.593-MICRONS

FREE APERTURE

ORIGINAL PAGE IS
OF POOR QUALITY

IRRADIANCE ON THE FOCAL PLANE,

0=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.948-MICRONS

VERTICAL SCALE 1-INCH= 10.593-MICRONS

FREE APERTURE

ORIGINAL PAGE IS
OF POOR QUALITY

Field point #0, $r_o - r_c = 0$
 \cos^2 weighted aperture

IRRADIANCE ON THE FOCAL PLANE, 1000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.948-MICRONS

VERTICAL SCALE 1-INCH= 10.593-MICRONS

.207FILTER TRANSMITTANCE AT EDGE OF APERTURE

ORI
OF

IRRADIANCE ON THE FOCAL PLANE, 10000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.948-MICRONS

VERTICAL SCALE 1-INCH= 10.593-MICRONS

.207FILTER TRANSMITTANCE AT EDGE OF APERTURE

IRRADIANCE ON THE FOCAL PLANE, 100000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.948-MICRONS

VERTICAL SCALE 1-INCH= 10.593-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

ORIGINAL OF RECORD

[The page contains a large number of faint, illegible markings and artifacts, likely from a scanning process or a very faded document.]

IRRADIANCE ON THE FOCAL PLANE,
HORIZONTAL SCALE 1-INCH= -2.948-MICRONS

0=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

VERTICAL SCALE 1-INCH= 10.593-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

Field point #1, $r_o - r_c = 1.0$

Free aperture

WAVE ABERRATION (WAVELENGTH UNITS)

-.17	-.30	-.37	-.39	-.38	-.35	-.31	-.28	-.25	-.24	-.24	-.25	-.28	-.31	-.35	-.38	-.39	-.37	-.30	-.17
-.13	-.26	-.32	-.34	-.33	-.30	-.26	-.22	-.20	-.18	-.18	-.20	-.22	-.26	-.30	-.33	-.34	-.32	-.26	-.13
-.10	-.22	-.29	-.30	-.29	-.26	-.22	-.18	-.15	-.14	-.14	-.15	-.18	-.22	-.26	-.29	-.30	-.29	-.22	-.10
-.08	-.19	-.25	-.27	-.25	-.22	-.18	-.14	-.11	-.10	-.10	-.11	-.14	-.18	-.22	-.25	-.27	-.25	-.19	-.08
-.05	-.17	-.23	-.24	-.23	-.19	-.15	-.11	-.08	-.07	-.07	-.08	-.11	-.15	-.19	-.23	-.24	-.23	-.17	-.05
-.03	-.15	-.21	-.22	-.20	-.17	-.13	-.09	-.06	-.04	-.04	-.06	-.09	-.13	-.17	-.20	-.22	-.21	-.15	-.03
-.01	-.13	-.19	-.20	-.19	-.15	-.11	-.07	-.04	-.03	-.03	-.04	-.07	-.11	-.15	-.19	-.20	-.19	-.13	-.01
-.00	-.12	-.18	-.19	-.17	-.14	-.10	-.06	-.03	-.01	-.01	-.03	-.06	-.10	-.14	-.17	-.19	-.18	-.12	-.00
.01	-.11	-.17	-.18	-.16	-.13	-.09	-.05	-.02	-.01	-.01	-.02	-.05	-.09	-.13	-.16	-.18	-.17	-.11	.01
.02	-.10	-.16	-.18	-.16	-.13	-.09	-.05	-.02	-.00	-.00	-.02	-.05	-.09	-.13	-.16	-.18	-.16	-.10	.02
.03	-.09	-.15	-.17	-.16	-.12	-.08	-.05	-.02	-.00	-.00	-.02	-.05	-.08	-.12	-.16	-.17	-.15	-.09	.03
.04	-.09	-.15	-.17	-.16	-.12	-.09	-.05	-.02	-.01	-.01	-.02	-.05	-.09	-.12	-.16	-.17	-.15	-.09	.04
.05	-.08	-.15	-.17	-.16	-.13	-.09	-.05	-.03	-.01	-.01	-.03	-.05	-.09	-.13	-.16	-.17	-.15	-.08	.05
.06	-.07	-.15	-.17	-.16	-.13	-.10	-.06	-.03	-.02	-.02	-.03	-.06	-.10	-.13	-.16	-.17	-.15	-.07	.06
.07	-.07	-.14	-.17	-.16	-.14	-.10	-.07	-.04	-.03	-.03	-.04	-.07	-.10	-.14	-.16	-.17	-.14	-.07	.07
.08	-.06	-.14	-.17	-.16	-.14	-.11	-.08	-.05	-.04	-.04	-.05	-.08	-.11	-.14	-.16	-.17	-.14	-.06	.08
.09	-.05	-.14	-.17	-.17	-.14	-.11	-.08	-.06	-.05	-.05	-.06	-.08	-.11	-.14	-.17	-.17	-.14	-.05	.09
.11	-.04	-.13	-.17	-.17	-.15	-.12	-.09	-.07	-.05	-.05	-.07	-.09	-.12	-.15	-.17	-.17	-.13	-.04	.11
.13	-.02	-.12	-.16	-.17	-.15	-.12	-.10	-.08	-.06	-.06	-.08	-.10	-.12	-.15	-.17	-.16	-.12	-.02	.13
.16	-.01	-.10	-.15	-.16	-.15	-.13	-.10	-.08	-.07	-.07	-.08	-.10	-.13	-.15	-.16	-.15	-.10	-.01	.16

SQUARED-COSINE WEIGHTED APERTURE
FILTER WEIGHTS (AMPLITUDE RATIO)

.21	.22	.25	.28	.31	.35	.39	.42	.44	.46	.46	.44	.42	.39	.35	.31	.28	.25	.22	.21
.22	.23	.26	.29	.33	.37	.41	.45	.47	.48	.48	.47	.45	.41	.37	.33	.29	.26	.23	.22
.25	.26	.29	.32	.37	.41	.46	.49	.52	.53	.53	.52	.49	.46	.41	.37	.32	.29	.26	.25
.28	.29	.32	.36	.41	.46	.51	.56	.59	.60	.60	.59	.56	.51	.46	.41	.36	.32	.29	.28
.31	.33	.37	.41	.47	.53	.58	.63	.66	.68	.68	.66	.63	.58	.53	.47	.41	.37	.33	.31
.35	.37	.41	.46	.53	.59	.66	.71	.75	.77	.77	.75	.71	.66	.59	.53	.46	.41	.37	.35
.39	.41	.46	.51	.58	.66	.72	.78	.83	.85	.85	.83	.78	.72	.66	.58	.51	.46	.41	.39
.42	.45	.49	.56	.63	.71	.78	.85	.89	.92	.92	.89	.85	.78	.71	.63	.56	.49	.45	.42
.44	.47	.52	.59	.66	.75	.83	.89	.94	.97	.97	.94	.89	.83	.75	.66	.59	.52	.47	.44
.46	.48	.53	.60	.68	.77	.85	.92	.97	.99	.99	.97	.92	.85	.77	.68	.60	.53	.48	.46
.46	.48	.53	.60	.68	.77	.85	.92	.97	.99	.99	.97	.92	.85	.77	.68	.60	.53	.48	.46
.44	.47	.52	.59	.66	.75	.83	.89	.94	.97	.97	.94	.89	.83	.75	.66	.59	.52	.47	.44
.42	.45	.49	.56	.63	.71	.78	.85	.89	.92	.92	.89	.85	.78	.71	.63	.56	.49	.45	.42
.39	.41	.46	.51	.58	.66	.72	.78	.83	.85	.85	.83	.78	.72	.66	.58	.51	.46	.41	.39
.35	.37	.41	.46	.53	.59	.66	.71	.75	.77	.77	.75	.71	.66	.59	.53	.46	.41	.37	.35
.31	.33	.37	.41	.47	.53	.58	.63	.66	.68	.68	.66	.63	.58	.53	.47	.41	.37	.33	.31
.28	.29	.32	.36	.41	.46	.51	.56	.59	.60	.60	.59	.56	.51	.46	.41	.36	.32	.29	.28
.25	.26	.29	.32	.37	.41	.46	.49	.52	.53	.53	.52	.49	.46	.41	.37	.32	.29	.26	.25
.22	.23	.26	.29	.33	.37	.41	.45	.47	.48	.48	.47	.45	.41	.37	.33	.29	.26	.23	.22
.21	.22	.25	.28	.31	.35	.39	.42	.44	.46	.46	.44	.42	.39	.35	.31	.28	.25	.22	.21

ORIGINAL PAGE IS
OF POOR QUALITY

IRRADIANCE ON THE FOCAL PLANE, 1000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.924-MICRONS

VERTICAL SCALE 1-INCH= 10.591-MICRONS

FREE APERTURE

ORIGINAL PAGE IS
OF POOR QUALITY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

IRRADIANCE ON THE FOCAL PLANE, 10000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.924-MICRONS

VERTICAL SCALE 1-INCH= 10.591-MICRONS

FREE APERTURE

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099
1990	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100										

[illegible]

IRRADIANCE ON THE FOCAL PLANE, 100000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.924-MICRONS

VERTICAL SCALE 1-INCH= 10.591-MICRONS

FREE APERTURE

ORIGINAL PAGE IS
OF POOR QUALITY

IRRADIANCE ON THE FOCAL PLANE,

0=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.924-MICRONS

VERTICAL SCALE 1-INCH= 10.591-MICRONS

FREE APERTURE

Field point #1, $r_o - r_c = 1.0$

\cos^2 weighted aperture

IRRADIANCE ON THE FOCAL PLANE, 1000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.924-MICRONS

VERTICAL SCALE 1-INCH= 10.591-MICRONS

.207FILTER TRANSMITTANCE AT EDGE OF APERTURE

ORIGINAL PAGE IS
OF POOR QUALITY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150

151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200

201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250

251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300

301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350

351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400

401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450

451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500

501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550

551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600

601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650

651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700

701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750

751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800

801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850

851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900

901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950

951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

IRRADIANCE ON THE FOCAL PLANE, 10000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.924-MICRONS

VERTICAL SCALE 1-INCH= 10.591-MICRONS

.207FILTER TRANSMITTANCE AT EDGE OF APERTURE

ORIGINAL PAGE IS
OF POOR QUALITY

12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

.....

ORIGINAL PAGE IS
OF POOR QUALITY

40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

IRRADIANCE ON THE FOCAL PLANE, 100000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.924-MICRONS

VERTICAL SCALE 1-INCH= 10.591-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

ORIGINAL PAGE IS
OF POOR QUALITY

ORIGINAL PAGE IS
OF POOR QUALITY

IRRADIANCE ON THE FOCAL PLANE,

0=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.924-MICRONS

VERTICAL SCALE 1-INCH= 10.591-MICRONS

.207FILTER TRANSMITTANCE AT EDGE OF APERTURE

ORIGINAL PAGE IS
OF POOR QUALITY

Field point #2, $r_o - r_c = -1.0$

Free aperture

DESIGN NO.64325G, JPL CORRELATOR, RANGE CURVATURE CORRECTOR, SHIFT AND AUXILIARY LENSES 103177- 0
FIELD POINT NO. 2 -1.000000=H(Y) 0.000000=H(Z) 0.000000=G(Y) 1.000000=E(Y) .985081=E(Z)
 .943092=HPR(Y) 0.000000=HPR(Z) .012446=NA(Y) -.044782=NA(Z)

•6328=REFERENCE FOCUS WAVELENGTH

.6328=RAY TRACING WAVELENGTH

400 RAYS THROUGH ENTRANCE PUPIL

400 RAYS THROUGH EXIT PUPIL

0 VIGNETTED RAYS

ORIGINAL PAGE IS
OF POOR QUALITY

WAVE ABERRATION (WAVELENGTH UNITS)

.19	.02	-.08	-.13	-.15	-.14	-.12	-.10	-.08	-.07	-.07	-.08	-.10	-.12	-.14	-.15	-.13	-.08	.02	.19
.20	.02	-.07	-.12	-.13	-.12	-.10	-.08	-.06	-.05	-.05	-.06	-.08	-.10	-.12	-.13	-.12	-.07	.02	.20
.19	.02	-.07	-.12	-.13	-.11	-.09	-.07	-.05	-.03	-.03	-.05	-.07	-.09	-.11	-.13	-.12	-.07	.02	.19
.19	.03	-.07	-.11	-.12	-.11	-.08	-.06	-.04	-.02	-.02	-.04	-.06	-.08	-.11	-.12	-.11	-.07	.03	.19
.18	.02	-.07	-.11	-.11	-.10	-.07	-.05	-.03	-.02	-.02	-.03	-.05	-.07	-.10	-.11	-.11	-.07	.02	.18
.18	.02	-.07	-.11	-.11	-.10	-.07	-.04	-.02	-.01	-.01	-.02	-.04	-.07	-.10	-.11	-.11	-.07	.02	.18
.17	.02	-.07	-.11	-.11	-.09	-.07	-.04	-.02	-.01	-.01	-.02	-.04	-.07	-.09	-.11	-.11	-.07	.02	.17
.17	.02	-.07	-.11	-.11	-.09	-.07	-.04	-.02	-.01	-.01	-.02	-.04	-.07	-.09	-.11	-.11	-.07	.02	.17
.17	.02	-.07	-.10	-.11	-.09	-.06	-.04	-.01	-.00	-.00	-.01	-.04	-.06	-.09	-.11	-.10	-.07	.02	.17
.18	.02	-.07	-.10	-.11	-.09	-.06	-.04	-.01	-.00	-.00	-.01	-.04	-.06	-.09	-.11	-.10	-.07	.02	.18
.18	.03	-.06	-.10	-.11	-.09	-.06	-.03	-.01	-.00	-.00	-.01	-.03	-.06	-.09	-.11	-.10	-.06	.03	.18
.18	.02	-.06	-.10	-.10	-.09	-.06	-.03	-.01	.00	.00	-.01	-.03	-.06	-.09	-.10	-.10	-.06	.02	.18
.19	.04	-.05	-.09	-.10	-.08	-.06	-.03	-.01	.00	.00	-.01	-.03	-.06	-.08	-.10	-.09	-.05	.04	.19
.21	.05	-.04	-.08	-.09	-.07	-.05	-.02	-.01	.01	.01	-.01	-.02	-.05	-.07	-.09	-.08	-.04	.05	.21
.23	.07	-.02	-.06	-.08	-.06	-.04	-.02	.00	.01	.01	.00	-.02	-.04	-.06	-.08	-.06	-.02	.07	.23
.26	.09	-.00	-.05	-.06	-.05	-.03	-.00	.01	.03	.03	.01	-.00	-.03	-.05	-.06	-.05	-.00	.09	.26
.28	.12	.02	-.03	-.04	-.03	-.02	.01	.03	.04	.04	.03	.01	-.02	-.03	-.04	-.03	.02	.12	.28
.32	.15	.05	-.00	-.02	-.01	.00	.03	.04	.05	.05	.04	.03	.00	-.01	-.02	-.00	.05	.15	.32
.37	.19	.09	.03	.01	.02	.03	.05	.07	.08	.08	.07	.05	.03	.02	.01	.03	.09	.19	.37
.43	.24	.13	.07	.05	.05	.06	.08	.09	.10	.10	.09	.08	.06	.05	.05	.07	.13	.24	.43

SQUARED-COSINE WEIGHTED APERTURE

FILTER WEIGHTS (AMPLITUDE RATIO)

.21	.22	.25	.28	.31	.35	.39	.42	.44	.46	.46	.44	.42	.39	.35	.31	.28	.25	.22	.21
.22	.23	.26	.29	.33	.37	.41	.45	.47	.48	.48	.47	.45	.41	.37	.33	.29	.26	.23	.22
.25	.26	.29	.32	.37	.41	.46	.49	.52	.53	.53	.52	.49	.46	.41	.37	.32	.29	.26	.25
.28	.29	.32	.36	.41	.46	.51	.56	.59	.60	.60	.59	.56	.51	.46	.41	.36	.32	.29	.28
.31	.33	.37	.41	.47	.53	.58	.63	.66	.68	.68	.66	.63	.58	.53	.47	.41	.37	.33	.31
.35	.37	.41	.46	.53	.59	.66	.71	.75	.77	.77	.75	.71	.66	.59	.53	.46	.41	.37	.35
.39	.41	.46	.51	.58	.66	.72	.78	.83	.85	.85	.83	.78	.72	.66	.58	.51	.46	.41	.39
.42	.45	.49	.56	.63	.71	.78	.85	.89	.92	.92	.89	.85	.78	.71	.63	.56	.49	.45	.42
.44	.47	.52	.59	.66	.75	.83	.89	.94	.97	.97	.94	.89	.83	.75	.66	.59	.52	.47	.44
.46	.48	.53	.60	.68	.77	.85	.92	.97	.99	.99	.97	.92	.85	.77	.68	.60	.53	.48	.46
.46	.48	.53	.60	.68	.77	.85	.92	.97	.99	.99	.97	.92	.85	.77	.68	.60	.53	.48	.46
.44	.47	.52	.59	.66	.75	.83	.89	.94	.97	.97	.94	.89	.83	.75	.66	.59	.52	.47	.44
.42	.45	.49	.56	.63	.71	.78	.85	.89	.92	.92	.89	.85	.78	.71	.63	.56	.49	.45	.42
.39	.41	.46	.51	.58	.66	.72	.78	.83	.85	.85	.83	.78	.72	.66	.58	.51	.46	.41	.39
.35	.37	.41	.46	.53	.59	.66	.71	.75	.77	.77	.75	.71	.66	.59	.53	.46	.41	.37	.35
.31	.33	.37	.41	.47	.53	.58	.63	.66	.68	.68	.66	.63	.58	.53	.47	.41	.37	.33	.31
.28	.29	.32	.36	.41	.46	.51	.56	.59	.60	.60	.59	.56	.51	.46	.41	.36	.32	.29	.28
.25	.26	.29	.32	.37	.41	.46	.49	.52	.53	.53	.52	.49	.46	.41	.37	.32	.29	.26	.25
.22	.23	.26	.29	.33	.37	.41	.45	.47	.48	.48	.47	.45	.41	.37	.33	.29	.26	.23	.22
.21	.22	.25	.28	.31	.35	.39	.42	.44	.46	.46	.44	.42	.39	.35	.31	.28	.25	.22	.21

IRRADIANCE ON THE FOCAL PLANE, 1000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.943-MICRONS

VERTICAL SCALE 1-INCH= 10.591-MICRONS

FREE APERTURE

40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

ORIGINAL PAGE IS
OF POOR QUALITY

72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

IRRADIANCE ON THE FOCAL PLANE, 10000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.943-MICRONS

VERTICAL SCALE 1-INCH= 10.591-MICRONS

FREE APERTURE

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89</											

IRRADIANCE ON THE FOCAL PLANE, 100000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.943-MICRONS

VERTICAL SCALE 1-INCH= 10.591-MICRONS

FREE APERTURE

[illegible]

IRRADIANCE ON THE FOCAL PLANE,

0=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.943-MICRONS

VERTICAL SCALE 1-INCH= 10.591-MICRONS

FREE APERTURE

Field point #2, $r_0 - r_c = -1.0$
 \cos^2 weighted aperture

IRRADIANCE ON THE FOCAL PLANE, 1000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.943-MICRONS

VERTICAL SCALE 1-INCH= 10.591-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

ORIGINAL PAGE IS
OF POOR QUALITY

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IRRADIANCE ON THE FOCAL PLANE, 10000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.943-MICRONS

VERTICAL SCALE 1-INCH= 10.591-MICRONS

.207FILTER TRANSMITTANCE AT EDGE OF APERTURE

ORIGINAL PAGE IS
OF POOR QUALITY

IRRADIANCE ON THE FOCAL PLANE $\cdot 10^{-10}$ = PEAK INTENSITY ON THE ABERRATION-FREE IMAGE
HORIZONTAL SCALE 1-INCH = 2.943-MICRONS
VERTICAL SCALE 1-INCH = 10.591-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

[illegible]

IRRADIANCE ON THE FOCAL PLANE,

0=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.943-MICRONS

VERTICAL SCALE 1-INCH= 10.591-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

Phase I

DESIGN NO.64325IX, JPL CORRELATOR, RCC, SHIFT LENS, DUMMY AZIMUTH TELESCOPE.

032377-347

2 -2 1 .332500=PM(1) 0.000000=SIN UM(1) 1.000000=HP(1) 0.000000=TAN UP(1)
 2 -2 1 1.650000=PM(2) 0.000000=SIN UM(2) 0.000000=HP(2) 0.000000=TAN UP(2)

	RADIUS,ETC	AXL.DSTNCE	M-INDEX	L-INDEX	U-INDEX	GLASS CODE,NAME	1ST.CA	2ND.CA	STATION
		0.0000	1.00000	1.00000	1.00000		0.00	0.00	130.7153
1 RTN	-.0053	0.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	130.7153
2 TRN	-5.4900	0.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	130.7153
3 RPH *****	.0000	0.0000	1.00000	1.00000	1.00000	-.056 XXXXXX	0.00	0.00	130.7153
4 TRN	5.4900	18.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	130.7153
5 SPH	-10.4469	1.8839	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	112.7153
6 SPH	-13.4336	.0307	1.00000	1.00000	1.00000	0.000	0.00	0.00	110.8314
7 SPH	31.1330	1.3652	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	110.8007
8 SPH	-24.5830	5.5793	1.00000	1.00000	1.00000	0.000	0.00	0.00	109.4355
9 SPH	-14.9126	1.3477	1.50571	1.51423	1.50592	508.612 ZKN7	0.00	0.00	103.8562
10 SPH	15.8548	3.6306	1.00000	1.00000	1.00000	0.000	0.00	0.00	102.5085
11 SPH	24.5464	1.3652	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	98.8779
12 SPH	-34.5304	3.5303	1.00000	1.00000	1.00000	0.000	0.00	0.00	97.5127
13 SPH	13.1420	1.8553	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	93.9824
14 SPH	10.5330	16.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	92.1271
15 RTN	-.0587	-.1653	1.00000	1.00000	1.00000	0.000	0.00	0.00	76.1271
16 SPH	-6.6582	.3305	1.79883	1.82776	1.79609	805.254 SF6	0.00	0.00	76.2923
17 CYL	-6.6582	-.1653	1.00000	1.00000	1.00000	0.000	0.00	0.00	75.9618
18 RTN	.0587	1.2919	1.00000	1.00000	1.00000	0.000	0.00	0.00	76.1271
19 RTN	.0587	-.1630	1.00000	1.00000	1.00000	0.000	0.00	0.00	74.8352
20 CYL	-7.3958	.3260	1.79883	1.82776	1.79609	805.254 SF6	0.00	0.00	74.9982
21 SPH	-7.7230	-.1630	1.00000	1.00000	1.00000	0.000	0.00	0.00	74.6722
22 RTN	-.0587	1.2522	1.00000	1.00000	1.00000	0.000	0.00	0.00	74.8352
23 RTN	-.0223	0.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	73.5830

ORIGINAL PAGE IS
OF POOR QUALITY

ORIGINAL PAGE IS
OF POOR QUALITY

24 CYL	5.6253	.2500	1.79883	1.82776	1.79609	805.254 SF6	0.00	0.00	73.5830
25 SPH	30.3365	0.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	73.3330
26 RTN	.0223	17.9790	1.00000	1.00000	1.00000	0.000	0.00	0.00	73.3330
27 SPH	-10.5330	1.8553	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	55.3540
28 SPH	-12.1420	3.5303	1.00000	1.00000	1.00000	0.000	0.00	0.00	53.4987
29 SPH	34.5304	1.3652	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	49.9684
30 SPH	-24.5464	3.6303	1.00000	1.00000	1.00000	0.000	0.00	0.00	48.6032
31 SPH	-15.8548	1.3477	1.50671	1.51423	1.50592	508.612 ZKN7	0.00	0.00	44.9729
32 SPH	14.9126	5.5793	1.00000	1.00000	1.00000	0.000	0.00	0.00	43.6252
33 SPH	24.5830	1.3652	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	38.0459
34 SPH	-31.1330	.0307	1.00000	1.00000	1.00000	0.000	0.00	0.00	36.6807
35 SPH	13.4336	1.8639	1.74969	1.77469	1.74729	755.276 SF4	0.00	0.00	36.6500
36 SPH	10.4469	17.2604	1.00000	1.00000	1.00000	0.000	0.00	0.00	34.7661
37 CYL	4.7640	.6500	1.75759	1.77722	1.75566	.028 XXXXXX	0.00	0.00	17.5057
38 CYL	-4.4429	0.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	16.8557
39 CYL	-3.6353	0.0000	1.61868	1.63477	1.61711	.029 XXXXXX	0.00	0.00	16.8557
40 CYL	28.9570	8.3670	1.00000	1.00000	1.00000	0.000	0.00	0.00	16.8557
41 CYL	3.3555	.1750	1.79553	1.82462	1.79308	.040 XXXXXX	0.00	0.00	8.4886
42 CYL	-2.1443	5.7336	1.00000	1.00000	1.00000	0.000	0.00	0.00	8.3136
43 RTN	.0761	0.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	2.5800
44 CYL	INFINITE	.4000	1.79883	1.82776	1.79609	805.254 SF6	0.00	0.00	2.5800
45 CYL	-1.2000	0.0000	1.00000	1.00000	1.00000	0.000	0.00	0.00	2.1800
46 RTN	-.0761	.5000	1.00000	1.00000	1.00000	0.000	0.00	0.00	2.1800
47 CYL	1.2000	.4000	1.79883	1.82776	1.79609	805.254 SF6	0.00	0.00	1.6800
48 CYL	INFINITE	1.2600	1.00000	1.00000	1.00000	0.000	0.00	0.00	1.2800
49 SPH	INFINITE	-.0226	1.00000	1.00000	1.00000	0.000	0.00	0.00	-.0000

3 4.069600E+05 3.906200E-01 TABLE OF CONSTANTS -4.557300E+03 1.106000E+02 6.563200E+03

FIRST ORDER PARAMETERS ON MERIDIONAL PLANE

OBJECT DISTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
-27.670022	999999.999996	999999.999996	999999.999996	372250.382545	182913.015351	1.254943
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
1.000000	999999.999996	41.609055	-20.443404	-40.196455	4550.388522	-.966043
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-.966063	0.000000	130.690195	129.435252	-157.105274	.000303	-1.035130
APT.STOP SIZE	APT.STOP DIST	FROM SHFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM SHFCE.NO
0.000000	1.248490	22.000000	158.360217	1.932125	1.254943	46.000000

FIRST ORDER PARAMETERS ON EQUATORIAL PLANE

OBJECT DISTNCE	ENTR.PUP.DIST	FRST.PPAL.PNT	EQV.FCL.LNGTH	SCND.PPAL.PNT	EXT.PUP.DSTNC	IMAGE DISTNCE
175.467238	999999.999996	0.000000	0.000000	0.000000	999999.999996	1.302600
OBJECT HEIGHT	ENTR.PUP.SIZE	OBJT.SPCE.FNO	INF.EQUIV.FNO	IMGE.SPCE.FNO	EXT.PUPL.SIZE	IMAGE HEIGHT
0.000000	999999.999996	-53.171890	9.582485	11.689796	999999.999996	0.000000
MAGNIFICATION	SEMIANG.FIELD	FRNT.VTX.DIST	BARREL LENGTH	BACK VTX.DIST	SEMIANG.FIELD	DEMAGNIFICATN
-.219649	0.000000	130.737852	129.435252	46.031986	0.000000	-4.544573
APT.STOP SIZE	APT.STOP DIST	FROM SHFCE.NO	TRACK LENGTH	FLD.STOP SIZE	FLD.STOP DIST	FROM SHFCE.NO
0.000000	0.000000	0.000000	-44.729386	0.000000	4.476031	42.000000

Field point #0, $r_o - r_c = 0$

Free aperture

DESIGN NO.64325IX, JPL CORRELATOR, RCC, SHIFT LENS, DUMMY AZIMUTH TELESCOPE. 032377-347
FIELD POINT NO. 0 0.000000=H(Y) 0.000000=H(Z) 0.000000=G(Y) 1.000000=E(Y) 1.000000=E(Z)
-.073927=HPR(Y) -.000042=HPR(Z) .012496=NA(Y) -.044519=NA(Z)
.6328=REFERENCE FOCUS WAVELENGTH .6328=RAY TRACING WAVELENGTH
400 RAYS THROUGH ENTRANCE PUPIL 400 RAYS THROUGH EXIT PUPIL 0 VIGNETTED RAYS

FIELD POINT NO. 0

$$0.000600 = H(Y)$$
$$0.0000000 = H(Z)$$
$$0.000000 = G(Y)$$
$$1.0000000 = F(Y)$$

1.000200=E (7)

$$-0.073927 = \text{MPK}(Y)$$
$$-0.000042 = \text{HPR}(Z)$$

012496=NA(Y)

$$= -0.044519 = NA(7)$$

•6328=REFERENCE FOCUS WAVELENGTH

•6328=RAY TRACING WAVELENGTH

400 RAYS THROUGH ENTRANCE PUPIL

400 RAYS THROUGH EXIT PUPIL

0 VIGNETTED RAYS

A 20x20 grid of small black squares on a white background. The squares are arranged in a regular pattern, with some squares missing or faded, creating a sparse matrix or a binary image. The grid is composed of 400 small squares in total.

WAVE ABERRATION (WAVELENGTH UNITS)

.13	-.07	-.19	-.24	-.24	-.21	-.17	-.13	-.10	-.09	-.10	-.13	-.17	-.23	-.29	-.34	-.37	-.37	-.31	-.17
.14	-.06	-.18	-.22	-.22	-.19	-.15	-.11	-.08	-.07	-.07	-.10	-.14	-.20	-.26	-.31	-.34	-.33	-.27	-.13
.15	-.05	-.17	-.21	-.21	-.18	-.14	-.09	-.06	-.05	-.05	-.08	-.12	-.17	-.23	-.28	-.32	-.31	-.24	-.11
.15	-.04	-.16	-.20	-.20	-.17	-.12	-.08	-.05	-.03	-.04	-.06	-.10	-.16	-.21	-.26	-.30	-.29	-.22	-.08
.16	-.04	-.15	-.19	-.19	-.16	-.11	-.07	-.04	-.02	-.02	-.05	-.09	-.14	-.20	-.25	-.28	-.27	-.21	-.07
.16	-.04	-.15	-.19	-.19	-.15	-.11	-.06	-.03	-.01	-.01	-.04	-.08	-.13	-.19	-.24	-.26	-.25	-.19	-.05
.16	-.04	-.15	-.19	-.18	-.15	-.10	-.06	-.03	-.01	-.01	-.03	-.07	-.12	-.18	-.23	-.25	-.24	-.17	-.04
.16	-.04	-.15	-.19	-.18	-.15	-.10	-.06	-.02	-.00	-.00	-.03	-.07	-.12	-.17	-.22	-.24	-.24	-.17	-.03
.16	-.04	-.15	-.19	-.18	-.15	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.11	-.17	-.22	-.24	-.23	-.16	-.02
.17	-.04	-.14	-.19	-.18	-.15	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.11	-.16	-.21	-.24	-.22	-.16	-.01
.16	-.03	-.14	-.18	-.18	-.15	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.11	-.16	-.21	-.24	-.22	-.16	-.01
.17	-.03	-.14	-.18	-.18	-.15	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.11	-.16	-.21	-.23	-.22	-.15	-.01
.18	-.02	-.13	-.17	-.17	-.14	-.10	-.06	-.02	-.00	-.00	-.02	-.06	-.11	-.16	-.21	-.23	-.22	-.15	-.00
.19	-.00	-.12	-.17	-.17	-.14	-.10	-.05	-.02	-.00	-.00	-.02	-.06	-.11	-.16	-.21	-.23	-.22	-.15	.00
.21	.00	-.11	-.16	-.16	-.13	-.09	-.05	-.01	.00	.00	-.02	-.05	-.10	-.16	-.20	-.23	-.22	-.14	.00
.23	.03	-.09	-.14	-.15	-.12	-.08	-.04	-.01	.01	.01	-.01	-.05	-.10	-.15	-.20	-.22	-.21	-.14	.01
.26	.05	-.07	-.12	-.13	-.11	-.07	-.03	.00	.02	.02	-.01	-.04	-.09	-.15	-.19	-.22	-.20	-.13	.02
.29	.08	-.04	-.10	-.11	-.09	-.05	-.01	.02	.03	.03	.01	-.03	-.08	-.14	-.18	-.21	-.19	-.12	.02
.33	.12	-.01	-.07	-.08	-.06	-.03	.01	.03	.05	.04	.02	-.02	-.07	-.12	-.17	-.20	-.18	-.11	.03
.38	.16	.03	-.03	-.05	-.03	-.00	.03	.06	.07	.06	.04	-.00	-.05	-.11	-.16	-.18	-.17	-.10	.05

SQUARED-COSINE WEIGHTED APERTURE

FILTER WEIGHTS (AMPLITUDE RATIO)

.21	.22	.25	.28	.31	.35	.39	.42	.44	.46	.46	.44	.42	.39	.35	.31	.28	.25	.22	.21
.22	.23	.26	.29	.33	.37	.41	.45	.47	.48	.48	.47	.45	.41	.37	.33	.29	.26	.23	.22
.25	.26	.29	.32	.37	.41	.46	.49	.52	.53	.53	.52	.49	.46	.41	.37	.32	.29	.26	.25
.28	.29	.32	.36	.41	.46	.51	.56	.59	.60	.60	.59	.56	.51	.46	.41	.36	.32	.29	.28
.31	.33	.37	.41	.47	.53	.58	.63	.66	.68	.68	.66	.63	.58	.53	.47	.41	.37	.33	.31
.35	.37	.41	.46	.53	.59	.66	.71	.75	.77	.77	.75	.71	.66	.59	.53	.46	.41	.37	.35
.39	.41	.46	.51	.58	.66	.72	.78	.83	.85	.85	.83	.78	.72	.66	.58	.51	.46	.41	.39
.42	.45	.49	.56	.63	.71	.78	.85	.89	.92	.92	.89	.85	.78	.71	.63	.56	.49	.45	.42
.44	.47	.52	.59	.66	.75	.83	.89	.94	.97	.97	.94	.89	.83	.75	.66	.59	.52	.47	.44
.46	.48	.53	.60	.68	.77	.85	.92	.97	.99	.99	.97	.92	.85	.77	.68	.60	.53	.48	.46
.46	.48	.53	.60	.68	.77	.85	.92	.97	.99	.99	.97	.92	.85	.77	.68	.60	.53	.48	.46
.44	.47	.52	.59	.66	.75	.83	.89	.94	.97	.97	.94	.89	.83	.75	.66	.59	.52	.47	.44
.42	.45	.49	.56	.63	.71	.78	.85	.89	.92	.92	.89	.85	.78	.71	.63	.56	.49	.45	.42
.39	.41	.46	.51	.58	.66	.72	.78	.83	.85	.85	.83	.78	.72	.66	.58	.51	.46	.41	.39
.35	.37	.41	.46	.53	.59	.66	.71	.75	.77	.77	.75	.71	.66	.59	.53	.46	.41	.37	.35
.31	.33	.37	.41	.47	.53	.58	.63	.66	.68	.68	.66	.63	.58	.53	.47	.41	.37	.33	.31
.28	.29	.32	.36	.41	.46	.51	.56	.59	.60	.60	.59	.56	.51	.46	.41	.36	.32	.29	.28
.25	.26	.29	.32	.37	.41	.46	.49	.52	.53	.53	.52	.49	.46	.41	.37	.32	.29	.26	.25
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.21	.22	.25	.28	.31	.35	.39	.42	.44	.46	.46	.44	.42	.39	.35	.31	.28	.25	.22	.21

ORIGINAL PAGE IS
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IRRADIANCE ON THE FOCAL PLANE, 1000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.961-MICRONS

VERTICAL SCALE 1-INCH= 10.548-MICRONS

FREE APERTURE

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IRRADIANCE ON THE FOCAL PLANE, 10000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.961-MICRONS

VERTICAL SCALE 1-INCH= 10.548-MICRONS

FREE APERTURE

8609195

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IRRADIANCE ON THE FOCAL PLANE, 100000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.961-MICRONS

VERTICAL SCALE 1-INCH= 10.548-MICRONS

FREE APERTURE

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Spec'd to @ Mr. J. Business "jms, Inc."

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IRRADIANCE ON THE FOCAL PLANE,

I_0 = PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH = -2.961-MICRONS

VERTICAL SCALE 1-INCH = 10.548-MICRONS

FREE APERTURE

5000015

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\cos^2 weighted aperture

IRRADIANCE ON THE FOCAL PLANE, 1000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.961-MICRONS

VERTICAL SCALE 1-INCH= 10.548-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

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IRRADIANCE ON THE FOCAL PLANE 10000*PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.961-MICRONS

VERTICAL SCALE 1-INCH= 10.548-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

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IRRADIANCE ON THE FOCAL PLANE*100000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.961-MICRONS

VERTICAL SCALE 1-INCH= 10.548-MICRONS

*207FILTER TRANSMITTANCE AT EDGE OF APERTURE

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IRRADIANCE ON THE FOCAL PLANE

0=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

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VERTICAL SCALE 1-INCH= 10.548-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

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Free aperture


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.6328=REFERENCE FOCUS WAVELENGTH      .6328=WAY TRACING WAVELENGTH
400 RAYS THROUGH ENTRANCE PUPIL      400 RAYS THROUGH EXIT PUPIL      0 VIGNETTED RAYS

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WAVE AMPLITUDE (KAYLEIGH UNITS)

SQUARED-COS WEIGHTED APERTURE

FILTER WEIGHTS (AMPLITUDE RATIO)

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.31	.33	.37	.41	.47	.53	.58	.63	.66	.68	.68	.66	.63	.58	.53	.47	.41	.37	.33	.31
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.39	.41	.46	.51	.58	.66	.72	.78	.83	.85	.85	.83	.78	.72	.66	.58	.51	.46	.41	.39
.42	.45	.49	.56	.63	.71	.78	.85	.89	.92	.92	.89	.85	.78	.71	.63	.56	.49	.45	.42
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.46	.48	.53	.60	.68	.77	.85	.92	.97	.99	.99	.97	.92	.85	.77	.68	.60	.53	.48	.46
.46	.48	.53	.60	.68	.77	.85	.92	.97	.99	.99	.97	.92	.85	.77	.68	.60	.53	.48	.46
.44	.47	.52	.59	.66	.75	.83	.89	.94	.97	.97	.94	.89	.83	.75	.66	.59	.52	.47	.44
.42	.45	.49	.56	.63	.71	.78	.85	.89	.92	.92	.89	.85	.78	.71	.63	.56	.49	.45	.42
.39	.41	.46	.51	.58	.66	.72	.78	.83	.85	.85	.83	.78	.72	.66	.58	.51	.46	.41	.39
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.31	.33	.37	.41	.47	.53	.58	.63	.66	.68	.68	.66	.63	.58	.53	.47	.41	.37	.33	.31
.28	.29	.32	.36	.41	.46	.51	.56	.59	.60	.60	.59	.56	.51	.46	.41	.36	.32	.29	.28
.25	.26	.29	.32	.37	.41	.46	.49	.52	.53	.53	.52	.49	.46	.41	.37	.32	.29	.26	.25
.22	.23	.26	.29	.33	.37	.41	.45	.47	.48	.48	.47	.45	.41	.37	.33	.29	.26	.23	.22
.21	.22	.25	.28	.31	.35	.39	.42	.44	.46	.46	.44	.42	.39	.35	.31	.28	.25	.22	.21

IRRADIANCE ON THE FOCAL PLANE, 1000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.965-MICRONS

VERTICAL SCALE 1-INCH= 10.543-MICRONS

FREE APERTURE

576555d

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IRRADIANCE ON THE FOCAL PLANE, 10000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.965-MICRONS

VERTICAL SCALE 1-INCH= 10.543-MICRONS

FREE APERTURE

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IRRADIANCE ON THE FOCAL PLANE, 100000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.965-MICRONS

VERTICAL SCALE 1-INCH= 10.543-MICRONS

FREE APERTURE

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ORIGINAL PAGE IS
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IRRADIANCE ON THE FOCAL PLANE,

0=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.965-MICRONS

VERTICAL SCALE 1-INCH= 10.543-MICRONS

FREE APERTURE

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Field point #1, $r_o - r_c = 1.0$,
 \cos^2 weighted aperture

IRRADIANCE ON THE FOCAL PLANE, 1000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.965-MICRONS

VERTICAL SCALE 1-INCH= 10.543-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

8909275

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IRRADIANCE ON THE FOCAL PLANE, 10000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.965-MICRONS

VERTICAL SCALE 1-INCH= 10.543-MICRONS

.207FILTER TRANSMITTANCE AT EDGE OF APERTURE

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ORIGINAL
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121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160
161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200
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681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720
721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760
761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800
801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840
841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880
881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920
921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960
961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

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IRRADIANCE ON THE FOCAL PLANE, 100000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.965-MICRONS

VERTICAL SCALE 1-INCH= 10.543-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88												

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IRRADIANCE ON THE FOCAL PLANE,

0=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.965-MICRONS

VERTICAL SCALE 1-INCH= 10.543-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

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Speedy & McJ Business Systems, Inc.

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OF POOR QUALITY

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Field point #2, $r - r = -1.0$

Free aperture

DESIGN NO. 64325IX, JPL CORRELATOR, RCC, SHIFT LENS, DUMMY AZIMUTH TELESCOPE. 032377-347
FIELD POINT NO. 2 -1.000000=H(Y) 0.000000=H(Z) 0.000000=G(Y) 1.000000=E(Y) .985081=E(Z)

032377-347

FIELD POINT NO. 2 -1.000000=H(Y) 0.000000=H(Z) 0.000000=G(Y) 1.000000=E(Y) .985081=E(Z)

$$-1.0000000 = H(Y)$$
$$0.0000000=H(Z)$$
$$0.000000 = G(Y) \quad 1.000000 = E(Y)$$
$$\bullet 9A50A1 = E(Z)$$
$$\cdot 892189 = \text{HPR}(Y)$$
$$.010595 = HPR(2)$$
$$.012492 = NA(Y) - .044727 = NA(Z)$$

•6328=REFERENCE FOCUS WAVELENGTH

.6328=RAY TRACING WAVELENGTH

400 RAYS THROUGH ENTRANCE PUPIL

400 RAYS THROUGH EXIT PUPIL

0 VIGNETTED RAYS

A black and white image of a dot grid paper. The grid consists of small, evenly spaced dots arranged in a rectangular pattern. A single horizontal line runs across the middle of the page, passing through the center of the grid. The line is slightly thicker than the dots and appears to be a solid black line. The dots are arranged in approximately 20 columns and 20 rows, with the horizontal line bisecting the grid into two equal halves.

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WAVE ABERRATION (WAVELENGTH UNITS)

.12	-.05	-.14	-.19	-.19	-.18	-.16	-.13	-.13	-.13	-.15	-.18	-.22	-.27	-.30	-.31	-.27	-.16	.04	.37
.13	-.04	-.13	-.17	-.18	-.16	-.13	-.11	-.10	-.10	-.11	-.15	-.18	-.23	-.26	-.26	-.22	-.11	.09	.42
.12	-.04	-.13	-.17	-.16	-.15	-.11	-.09	-.07	-.07	-.08	-.11	-.15	-.19	-.22	-.23	-.18	-.07	.13	.46
.12	-.04	-.13	-.16	-.16	-.13	-.10	-.07	-.05	-.05	-.06	-.09	-.12	-.16	-.19	-.19	-.15	-.04	.17	.50
.11	-.05	-.13	-.16	-.15	-.13	-.09	-.06	-.04	-.03	-.04	-.07	-.10	-.14	-.16	-.16	-.12	-.01	.19	.53
.10	-.05	-.13	-.16	-.15	-.12	-.09	-.05	-.03	-.02	-.03	-.05	-.08	-.12	-.14	-.14	-.10	.02	.22	.56
.09	-.06	-.14	-.16	-.15	-.12	-.08	-.05	-.02	-.01	-.02	-.04	-.07	-.10	-.12	-.12	-.07	.04	.25	.58
.08	-.07	-.15	-.17	-.16	-.12	-.08	-.05	-.02	-.01	-.01	-.03	-.06	-.09	-.11	-.11	-.06	.05	.26	.60
.06	-.08	-.16	-.18	-.16	-.13	-.09	-.05	-.02	-.00	-.01	-.02	-.05	-.08	-.10	-.09	-.05	.07	.28	.61
.05	-.10	-.17	-.19	-.17	-.13	-.09	-.05	-.02	-.00	-.00	-.02	-.04	-.07	-.09	-.08	-.03	.08	.29	.62
.04	-.10	-.17	-.19	-.17	-.14	-.09	-.05	-.02	-.00	-.00	-.02	-.04	-.07	-.08	-.07	-.03	.09	.30	.63
.03	-.11	-.18	-.20	-.18	-.14	-.10	-.06	-.02	-.00	-.00	-.01	-.04	-.06	-.08	-.07	-.02	.10	.31	.64
.02	-.12	-.19	-.20	-.19	-.15	-.10	-.06	-.02	-.00	-.00	-.01	-.04	-.06	-.07	-.07	-.01	.11	.31	.65
.01	-.13	-.19	-.21	-.19	-.15	-.10	-.06	-.03	-.01	-.00	-.01	-.03	-.06	-.07	-.06	-.01	.11	.32	.65
.01	-.13	-.19	-.21	-.19	-.15	-.11	-.06	-.03	-.01	-.00	-.01	-.03	-.05	-.07	-.05	-.00	.12	.33	.66
.01	-.12	-.19	-.21	-.19	-.15	-.11	-.06	-.03	-.00	-.00	-.01	-.03	-.05	-.06	-.05	.00	.13	.34	.66
.01	-.12	-.19	-.21	-.19	-.15	-.10	-.06	-.02	-.00	.00	-.01	-.02	-.04	-.05	-.04	.01	.13	.34	.67
.03	-.11	-.18	-.20	-.18	-.14	-.10	-.05	-.02	.00	.01	.00	-.01	-.03	-.05	-.03	.02	.14	.35	.68
.04	-.10	-.17	-.19	-.17	-.13	-.09	-.04	-.01	.01	.02	.01	-.01	-.03	-.03	-.02	.03	.15	.36	.69
.06	-.08	-.15	-.16	-.15	-.12	-.07	-.03	.00	.02	.03	.02	.01	-.01	-.02	-.01	.04	.16	.37	.70

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SQUARED-COSINE WEIGHTED APERTURE
 FILTER WEIGHTS (AMPLITUDE RATIO)

.21	.22	.25	.28	.31	.35	.39	.42	.44	.46	.46	.44	.42	.39	.35	.31	.28	.25	.22	.21
.22	.23	.26	.29	.33	.37	.41	.45	.47	.48	.48	.47	.45	.41	.37	.33	.29	.26	.23	.22
.25	.26	.29	.32	.37	.41	.46	.49	.52	.53	.53	.52	.49	.46	.41	.37	.32	.29	.26	.25
.28	.29	.32	.36	.41	.46	.51	.56	.59	.60	.60	.59	.56	.51	.46	.41	.36	.32	.29	.28
.31	.33	.37	.41	.47	.53	.58	.63	.66	.68	.68	.66	.63	.58	.53	.47	.41	.37	.33	.31
.35	.37	.41	.46	.53	.59	.66	.71	.75	.77	.77	.75	.71	.66	.59	.53	.46	.41	.37	.35
.39	.41	.46	.51	.58	.66	.72	.78	.83	.85	.85	.83	.78	.72	.66	.58	.51	.46	.41	.39
.42	.45	.49	.56	.63	.71	.78	.85	.89	.92	.92	.89	.85	.78	.71	.63	.56	.49	.45	.42
.44	.47	.52	.59	.66	.75	.83	.89	.94	.97	.97	.94	.89	.83	.75	.66	.59	.52	.47	.44
.46	.48	.53	.60	.68	.77	.85	.92	.97	.99	.99	.97	.92	.85	.77	.68	.60	.53	.48	.46
.46	.48	.53	.60	.68	.77	.85	.92	.97	.99	.99	.97	.92	.85	.77	.68	.60	.53	.48	.46
.44	.47	.52	.59	.66	.75	.83	.89	.94	.97	.97	.94	.89	.83	.75	.66	.59	.52	.47	.44
.42	.45	.49	.56	.63	.71	.78	.85	.89	.92	.92	.89	.85	.78	.71	.63	.56	.49	.45	.42
.39	.41	.46	.51	.58	.66	.72	.78	.83	.85	.85	.83	.78	.72	.66	.58	.51	.46	.41	.39
.35	.37	.41	.46	.53	.59	.66	.71	.75	.77	.77	.75	.71	.66	.59	.53	.46	.41	.37	.35
.31	.33	.37	.41	.47	.53	.58	.63	.66	.68	.68	.66	.63	.58	.53	.47	.41	.37	.33	.31
.28	.29	.32	.36	.41	.46	.51	.56	.59	.60	.60	.59	.56	.51	.46	.41	.36	.32	.29	.28
.25	.26	.29	.32	.37	.41	.46	.49	.52	.53	.53	.52	.49	.46	.41	.37	.32	.29	.26	.25
.22	.23	.26	.29	.33	.37	.41	.45	.47	.48	.48	.47	.45	.41	.37	.33	.29	.26	.23	.22
.21	.22	.25	.28	.31	.35	.39	.42	.44	.46	.46	.44	.42	.39	.35	.31	.28	.25	.22	.21

IRRADIANCE ON THE FOCAL PLANE, 1000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.947-MICRONS

VERTICAL SCALE 1-INCH= 10.551-MICRONS

FREE APERTURE

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IRRADIANCE ON THE FOCAL PLANE, 10000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.947-MICRONS

VERTICAL SCALE 1-INCH= 10.551-MICRONS

FREE APERTURE

50000000

Specialty & Mo. Business Systems, Inc.

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	8												

IRRADIANCE ON THE FOCAL PLANE, 100000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.947-MICRONS

VERTICAL SCALE 1-INCH= 10.551-MICRONS

FREE APERTURE

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IRRADIANCE ON THE FOCAL PLANE,

0=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.947-MICRONS

VERTICAL SCALE 1-INCH= 10.551-MICRONS

FREE APERTURE

5000000

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Field point #2, $r - r = -1.0$

\cos^2 weighted aperture

IRRADIANCE ON THE FOCAL PLANE, 1000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.947-MICRONS

VERTICAL SCALE 1-INCH= 10.551-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

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IRRADIANCE ON THE FOCAL PLANE, 10000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.947-MICRONS

VERTICAL SCALE 1-INCH= 10.551-MICRONS

.207FILTER TRANSMITTANCE AT EDGE OF APERTURE

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Specific to Mr. Business, Inc.

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IRRADIANCE ON THE FOCAL PLANE, 100000=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.947-MICRONS

VERTICAL SCALE 1-INCH= 10.551-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

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1453	1454	1455	1456	1457	1458	1459															

IRRADIANCE ON THE FOCAL PLANE,

0=PEAK INTENSITY ON THE ABERRATION-FREE IMAGE

HORIZONTAL SCALE 1-INCH= -2.947-MICRONS

VERTICAL SCALE 1-INCH= 10.551-MICRONS

.207 FILTER TRANSMITTANCE AT EDGE OF APERTURE

5000350

See also Mc. J. Business Systems, Inc.

ORIGINAL PAGE IS
OF POOR QUALITY